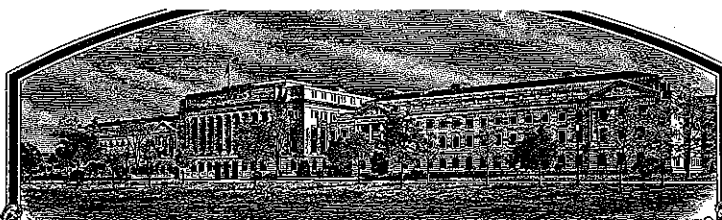


No.

200500348



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Coors Global Properties, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMERICAL GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BARLEY

'Moravian 69'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-third day of May, in the year two thousand and seven.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER Coors Global Properties, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME C69		3. VARIETY NAME Moravian 69	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Union Tower 165 South Union Blvd., Suite 170 Lakewood, Colorado 80228, United States of America		5. TELEPHONE (include area code) (720) 962-6560		FOR OFFICIAL USE ONLY PVPO NUMBER 200500348 FILING DATE Sept. 22, 2005	
		6. FAX (include area code) (720) 962-6558			
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Corporation		8. IF INCORPORATED, GIVE STATE OF INCORPORATION CO			
		9. DATE OF INCORPORATION January 24, 2002			
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers)					
Jay K. Malkin KLAAS, LAW, O'MEARA & MALKIN, P.C. 1999 Broadway, Suite 2225 Denver, Colorado 80202 United States of America					
11. TELEPHONE (include area code) (303) 298-9888		12. FAX (include area code) (303) 297-2266		13. E-MAIL ADMIN@KLAASLAW.COM	
14. CROP KIND (Common Name) 2-Row Spring Malting Barley		16. FAMILY NAME (Botanical) Poaceae (Gramineae)		18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.	
15. GENUS AND SPECIES NAME OF CROP Hordeum vulgare L.		17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)					
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,652), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)					
20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input checked="" type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input type="checkbox"/> NO (If "no", go to item 23)					
21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED					
22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)					
23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)					
24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)					
25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF OWNER Coors Global Properties, Inc. 			SIGNATURE OF OWNER		
NAME (Please print or type) Tara L.M. Deard			NAME (Please print or type)		
CAPACITY OR TITLE Secretary of Coors Global Properties, Inc.		DATE 9/16/05		CAPACITY OR TITLE	
				DATE	

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvpo/pvpindex.htm>

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 <http://www.ams.usda.gov/lsg/seed.htm>.

ITEM

- 19a. Give:
- (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
 - (2) the details of subsequent stages of selection and multiplication;
 - (3) evidence of uniformity and stability; and
 - (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
 - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See *Regulations and Rules of Practice, Section 97.103*).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

22. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

Not Applicable

23. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.) Beginning in mid-February of 2005, MORAVIAN 69 barley seed was sold to various growers in the U.S. in order to propagate the seed. Coors Brewing Company has the option to purchase the propagated (e.g. grown) seed to be used as a malt source in the production of beer. All activities involving MORAVIAN 69 which were undertaken before the mid-February 2005 date mentioned above were entirely and exclusively done for testing, experimentation, and/or increase purposes as per 7 USC 2401(b).

24. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

Not Applicable

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

EXHIBIT AOrigin and Breeding History of Moravian 69**1. GENEALOGY/BREEDING PEDIGREE:**

(A) Cross breeding and selection of the claimed barley variety (previously identified by temporary experimental number "C69" or "C98-36-5" but now designated hereinafter as "Moravian 69" which shall be considered the final variety name thereof) was performed by the following individuals who had at least some role in the development of the claimed variety during one or more stages of the development and/or propagation activities involving the claimed variety: Kathy R. Adams, Dennis J. Dolan, Roy J. Hanson, Berry J. Treat, James M. Jakicic, and James W. Hettinger. The development of the claimed variety began with the initial cross of the parental varieties discussed below in late fall of 1998 at the Coors Brewing Company Malting Barley Research Center, Burley, ID (USA). All of the foregoing individuals were employees of the Coors Brewing Company during their work on the development and/or propagation of Moravian 69. Prior to the filing of the current Plant Variety Protection Application, all right, title, and interest in and to Moravian 69 were assigned in full to Coors Global Properties, Inc. (the current owner of Moravian 69 and the present Plant Variety Protection Application) as extensively discussed in Exhibit E which accompanies this Application.

(B) The origin of Moravian 69 is as follows:

i. Barley variety "AC84-25-3" [female] was crossed with barley variety "AC87-29-12" [male] (e.g. AC-84-25-3 [female] x AC87-29-12 [male]) to yield a product designated hereinafter as barley variety "C91-194". As discussed below, C91-194 is the female parent of Moravian 69. Additional explanatory information regarding each of the particular varieties set forth in this genealogy/breeding pedigree will be presented below.

ii. Barley variety "UA" [female] was crossed with barley variety "UB" [male] (e.g. UA [female] x UB [male]) to yield a product designated hereinafter as

barley variety "96ACK-19". As discussed below, 96ACK-19 is the male parent of Moravian 69.

iii. The product of the cross set forth above in breeding sequence [i] (e.g. C91-194) was then crossed as a female parent with the product of the cross set forth above in breeding sequence [ii] (e.g. 96ACK-19) as a male parent (e.g. C91-194 [female] x 96ACK-19 [male]) to yield Moravian 69 (formerly "C98-36-5" or "C69" as previously stated).

In summary, the entire breeding sequence is as follows:

"AC84-25-3/AC87-29-12//UA/UB" or (expressed in a more short-hand form): "C91-194//96ACK-19".

(C) Background information regarding the above-listed parental varieties is as follows:

i. "AC84-25-3" - This variety was developed as an experimental barley variety by the Coors Brewing Company, with its pedigree being as follows: "Kimberly/Triumph".

ii. "AC87-29-12" - This variety was developed as an experimental barley variety by the Coors Brewing Company, with its pedigree being as follows "84AB1387/Nairn".

iii "C91-194" - This variety was developed as an experimental barley variety by the Coors Brewing Company, with its pedigree being as follows: "AC84-25-3/AC87-29-12".

iv "UA" - The pedigree of this variety is proprietary and unavailable.

v. "UB" - The pedigree of this variety is proprietary and unavailable.

vi. "96ACK-19" - This variety was developed by Dr. J. Ackermann & Co. of Germany, with its pedigree being as follows: "UA/UB".

2. DETAILS OF SUBSEQUENT STAGES OF SELECTION AND MULTIPLICATION

(A) The basic cross listed above (e.g. "AC84-25-3/AC87-29-12//UA/UB" or "C91-194//96ACK-19" [as previously stated]) was undertaken by the Coors Brewing Company Malting Barley Research Center at its greenhouse located in Burley, ID (USA) during the late fall of 1998.

(B) F1 seeds from the above-listed basic cross were harvested and increased by planting in the greenhouse at the Coors Brewing Company Malting Barley Research Center in Burley, ID (USA) during the winter/spring of 1999.

(C) F2 bulked seeds were then harvested and planted in the field at the Coors Brewing Company Malting Barley Research Center in Burley, ID (USA) in the spring of 1999 for segregating plant selection.

(D) F3 and F4 single plants were grown using a single seed descent method in the greenhouse at the Coors Brewing Company Malting Barley Research Center in Burley, ID (USA) during the fall/winter of 1999 and extending into 2000.

(E) F5 head rows were planted in the field at the Coors Brewing Company Malting Barley Research Center in Burley, ID (USA) in the spring of 2000.

(F) F6 individual head selections were then made and increased in a two (2)-meter row in New Zealand during the winter of 2000 and extending into 2001. The row was bulk harvested as pure seed.

(G) F7 observation trial plots were planted at the Coors Brewing Company Malting Barley Research Center in Burley, ID (USA) during the spring of 2001. The resulting line (initially designated as "C98-36-5") was identified as superior. C98-36-5 was selected for advancement based on its expression of superior agronomic and malting characteristics, as well as high yield and very large, plump seed.

(H) F8 C98-36-5 was planted in replicated/ multiple location yield trials in the spring of 2002 at the Coors Brewing Company Malting Barley Research Center in Burley, ID (USA), the Coors Research Farm in Center, CO (USA), the University of Wyoming Experiment Station in Powell, WY (USA), the Montana State University Huntley Experiment Station in Huntley, MT (USA), and John Sullivan Farms in Berthoud, CO (USA). Based on desirable agronomic characteristics, C98-36-5 was chosen for advanced breeders' seed development. At harvest, (F9) multiple head selections were taken for subsequent breeders' seed head rows.

(I) F9 head selections were increased in New Zealand during the winter of 2001 and extending into 2002.

(J) F10 breeders' seed was planted in the spring of 2002 at the Coors Brewing Company Malting Barley Research Center in Burley, ID (USA). At that time, C98-36-5 was renamed and given the experimental designation "Coors 69" or simply "C69".

(K) F11 foundation seed of C69 was increased in the spring of 2003 at the Coors Brewing Company Malting Barley Research Center in Burley, ID (USA).

(L) F12 registered seed was grown in New Zealand during the winter of 2003 and extending into 2004.

(M) F13 Certified seed was grown in both Idaho and Southern Colorado in 2004.

3. EVIDENCE OF UNIFORMITY AND STABILITY:

Barley variety Moravian 69 has been reproduced and judged stable for the past seven (7) generations. Variety Moravian 69 is uniform for all traits as described in Exhibit C (Objective Description of the Variety). Variety Moravian 69 shows no variants other than what would normally be expected due to environment.

6

4. SELECTION CRITERIA:

To assist in the examination and assessment of this Application, specific information will now be provided regarding the selection criteria associated with Moravian 69. Such criteria were generally based on agronomic performance, with the specific selection criteria of primary concern being as follows: (1) high grain yield; (2) plant height; (3) lodging resistance; (4) disease resistance; (5) plant phenotype; (6) kernel discoloration; (7) test weight; (8) plump kernels; (9) protein levels; (10) early maturity; and (11) malting characteristics. Additional information concerning the breeding of Moravian 69 is provided above in this Exhibit, with the distinguishing and differentiating characteristics of Moravian 69 compared with the closest varieties thereto and its parental varieties being set forth in Exhibit B.

It is Applicant's understanding that 84AB1387 was a barley line developed by the United States Department of Agriculture ("USDA") barley breeding program. The breeding history of this line (to the best of Applicant's knowledge based on its research and review of this matter) is as follows:

84AB1387 = 79AB5986/78AB10264

[More specifically, 84AB1387 involved a cross between the following parental varieties: (i) 79AB5986; and (ii) 78AB10264].

Regarding the above-listed parental varieties, the following breeding/historical information was also located:

A. 79AB5986 = 72AB3441//Lud/Klages

[Namely, 79AB5986 was the result of a cross between the following varieties: (i) 72AB3441; and (ii) the product of the cross between Lud and Klages].

B. 72AB3441 = Pirolina/69AB1810

[Namely, 72AB3441 was the result of a cross between the following varieties: (i) Pirolina; and (ii) 60AB1810].

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C. 78AB10264 = Hector/1810-53

[Namely, 78AB10264 was the result of a cross between the following varieties: (i) Hector; and (ii) 1810-53].

This is all of the information that Applicant was able to obtain regarding barley variety 84AB1387 and it is believed that the foregoing information provides a detailed overview of the parentage associated with 84AB1387. /

EXHIBIT B - STATEMENT OF DISTINCTNESS

This Exhibit will be divided into two sections. The first section involves genetic data which definitively distinguishes the claimed barley variety ("Moravian 69") from: (1) its parental varieties (namely, "AC84-25-3", "AC87-29-12", "C91-194", and "96ACK-19"); and (2) the varieties which are considered by Applicant to be closest thereto ("Moravian 37" and "Moravian 14").

The second section of the present Exhibit discloses a significant amount of agronomic data including but not limited to information involving differences in Plant Height, Heading Date, Yield, and other characteristics as explained below. This data provides clear and convincing support for a finding of distinctness regarding Moravian 69 compared with its parental varieties as identified above, as well as the varieties which are considered by Applicant to be closest thereto (Moravian 14 and Moravian 37). Accordingly and based on both the genetic data and the agronomic data to be discussed in this Exhibit, the present application is in condition for allowance.

A. Genetic DataI. PART 1: Moravian 69 v. "AC84-25-3", "AC87-29-12", "C91-194", and "96ACK-19"

A complex and detailed genetic testing protocol was undertaken in connection with Moravian 69, as well as the following parental varieties associated therewith: "AC84-25-3", "AC87-29-12", "C91-194", and "96ACK-19". The genetic tests outlined in this section provide definitive evidence that Moravian 69 is entirely distinct and unique relative to the above-listed varieties.

At this point, the genetic testing protocol (along with some background information involving the testing procedures that were employed and the scientific theories behind the tests) will now be provided. The genetic tests in this case were conducted by STA Laboratories, Inc. (1821 Vista View Drive, Longmont, CO [USA] 80504; Telephone: 1-303-651-6417; Internet: www.stalabs.com) which is highly experienced in testing processes of the type outlined herein. Likewise, the following explanation of the

testing procedures that were used, background information and text associated therewith, data tables, and photographs which accompany this report were generally provided by STA Laboratories, Inc. which is hereby acknowledged.

1. Background

As will be discussed extensively in this section of Exhibit B, a DNA analysis was conducted on five (5) barley varieties (namely, Moravian 69, "AC84-25-3", "AC87-29-12", "C91-194", and "96ACK-19"). It should be noted that the terms "C69" "C98-36-5", and "Moravian 69" are used interchangeably and equivalently throughout this discussion, with all of these terms involving the same barley variety. The terms "C69" and "C98-36-5" were the temporary/experimental names for the barley variety being claimed in this application which was later changed to Moravian 69 (See the historical discussion presented in Exhibit A).

The DNA analysis that was conducted in this case involved "Polymerase Chain Reaction" (e.g. "PCR") technology which enabled a unique DNA "fingerprint" to be obtained for each of the aforementioned varieties. In particular, 20 - 30 seeds associated with each of the above-listed barley varieties were initially grown in pots in a greenhouse environment. Two DNA extractions were then performed for each of the five test varieties. DNA extractions are generally discussed in, for example, Khalsa, P.D., et al., "Isolation, Characterization, and Inheritance of Microsatellite Loci in Alpine Larch and Western Larch", Genome, 43:439 - 448 (2000) which is incorporated herein by reference. A copy of this article is attached hereto as Attachment G-1. Each DNA extraction was composed of a bulk of 10 - 20 different individual plants which were harvested and freeze-dried prior to DNA extraction. PCR (e.g. "Polymerase Chain Reaction") analysis was then performed using a set of six "ISSR" (e.g. "Inter Simple Sequence Repeat" - discussed further below) primers/markers to genotype the above-listed barley varieties. The six ISSR markers were run on each of the two bulk DNA extractions for each of the five test varieties resulting in two repetitions for each of the samples. Additional and more in-depth information involving the genetic test procedures (and the results associated therewith) will be presented later in this section. It should also be noted that gel images (photographs) of the six ISSR markers will likewise be provided in this report and are discussed extensively below.

Having presented a brief explanation of the testing procedures that were employed (with more detailed data being set forth later in this discussion), some basic background information will now be provided concerning the technology and theories associated with the analytical methods of interest. If the reader of the present Exhibit is already familiar with this information, he or she may skip the remainder of this section and proceed to the next section which discusses specific test results involving Moravian 69.

A significant majority of the DNA in a cell is comprised of various amino acid sequences which do not contain any genetic information (also known as "non-coding DNA"). For many years, the function of non-coding DNA has been considered from a theoretical point of view. Dispersed throughout this DNA are simple amino acid sequences which are repeated many times. These sequences are traditionally known as "microsatellites" or "SSRs" (namely, "simple sequence repeats" or "short sequence repeats"). These sequences vary in length and composition. A variety of examples are provided below with the understanding that the number of possible alternatives is virtually unlimited. Some representative microsatellites are as follows:

1. **ATATATATATATATATATAT**
2. **CTTCTTCTTCTTCTTCTT**
3. **GTGTGTGTGTGTGTGTGTGT**

[wherein A = adenine; T = thymine; and G = guanine]

Because these microsatellite structures are scattered throughout an organism's entire genome, they can be isolated, analyzed, and ultimately employed as genetic "markers" in many useful applications. In particular, by determining the DNA sequences adjacent to a microsatellite sequence, it is possible to design a "primer sequence" which can be employed in PCR experiments to determine the presence or absence of the particular microsatellite in a chosen plant variety. For example, consider the following primer sequence:

technique, a primer is synthesized which contains a portion of the actual repeated sequence. At one end of the primer is a sequence of three (3) nucleotides which is used to "anchor" the primer to the three (3) nucleotides adjacent the repeated sequence. Since the actual adjacent sequence is not known, the primers are designed so that they contain a mixture of different nucleotides in the "terminal 3" positions. As a result, it is likely that some of the primers in the mixture will have exactly the correct sequence. This type of primer is known as an "anchored" ISSR.

It is also possible to use primers which bind only to the repeated sequence, itself. These particular primers are known as "non-anchored" ISSR primers which are further discussed in Bornet, B., et al., "Nonanchored Inter Simple Sequence Repeat (ISSR) Markers: Reproducible and Specific Tools for Genome Fingerprinting", Plant Molecular Biology Reporter, 19:209 - 215 (2001) - (copy attached hereto as Attachment G-2 and incorporated herein by reference). An example of such a situation is as follows:

(primers)
AAGGGTGGTGGTGGTGGT
TTCCGTGGTGGTGGTGGT
TAGGGTGGTGGTGGTGGT
*ATC*GGTGGTGGTGGTGGT
CGCTATTCCGT*ATC*GGTGGTGGTGGTGGTGGTGGT....
(microsatellite)

Furthermore, when two primers bind in opposite directions and are reasonably close together, the PCR process can be used to copy the DNA sequences between primers as follows:

```

                (primer 1)                (PCR copy)
***** . ==>----->
-----~::~::~::~::~::~::~::~::~::~::~*****
<-----<==. *****
                (PCR copy)                (primer 2)

```

As a result of the foregoing situation, a DNA fragment of a specific length is created. The above-listed process typically leads to many PCR products/fragments, each with a specific length. This "set" of DNA fragments serves as a "fingerprint" which can be employed as a unique "identifier" for a particular crop species and/or variety which is highly accurate.

The usefulness of ISSR markers for molecular genotyping and other molecular purposes in connection with crops (especially those for which SSR markers are not readily available) is discussed in the following article: Reddy, M., et al., "Inter simple sequence repeat (ISSR) polymorphism and its application in plant breeding", *Euphytica*, 128:9 - 17 (2002), a copy of which is attached hereto as Attachment G-3 (incorporated herein by reference). A summary of this article which appears on Page 9 thereof reads as follows:

Inter simple sequence repeat (ISSR)-PCR is a technique, which involves the use of microsatellite sequences as primers in a polymerase chain reaction to generate multilocus markers. It is a simple and quick method that combines most of the advantages of microsatellites (SSRs) and amplified fragment length polymorphism (AFLP) to the universality of random amplified polymorphic DNA (RAPD). ISSR markers are highly polymorphic and are useful in studies on genetic diversity, phylogeny, gene tagging, genome mapping and evolutionary biology. This review provides an overview of the details of the technique and its application in genetics and plant breeding in a wide range of crop plants.

Having set forth general background information involving the technology of concern, more detailed and specific PCR data will now be provided along with gel images (photographs), data tables, and other important materials. These items clearly and definitively distinguish Moravian 69 from the above-listed parental varieties and the varieties which are considered by Applicant to be the closest thereto (namely, Moravian 14 and Moravian 37).

2. Test Data

Preliminary Points of Explanatory Information Regarding the Genetic Data Presented Below:

Each of the ISSR ("Inter Simple Sequence Repeat") Images referenced below represents a single ISSR primer. Each ISSR primer produces multiple "bands" which are referred to as "markers". The markers (e.g. bands) that were analyzed are indicated by various arrows, followed by a number. The number refers to the particular marker number for the specific ISSR primer that is being analyzed. Markers detect the genetic makeup of a variety at a specific location in the genome of the variety. Also included in order to assist in the explanation of each ISSR Image are various Data Tables which summarize the information portrayed by the ISSR Images in tabular form.

With continued reference to the data materials to be presented and discussed below, the markers (e.g. the bands associated with the ISSR Images) are scored for their presence or absence. Varieties which have a band (as shown in the ISSR Images) for a given marker are genetically similar to each other for that particular marker. Likewise, varieties which lack a band (as shown in the ISSR Images) for a given marker are genetically similar to each other but, on the other hand, are genetically **different** from those varieties which have a band for the marker under consideration.

In the ISSR Images to be discussed extensively below, arrows that are marked with an "*" are important and designate a situation where a marker band is: (1) absent in one or more of the listed varieties and (2) present in one or more of the other listed varieties (with particular reference to a comparison of Moravian 69 with the other varieties under consideration). In such a situation, a variety which lacks the band in question is genetically different from the particular varieties which do, in fact, have the band. In this manner, various varieties can clearly and definitively be distinguished from each other. Conversely, arrows which do not have an "*" associated therewith involve a situation where a band was present in all of the samples being analyzed, with these markers not differentiating between the samples from a genetic standpoint. **Thus, in the information presented below (with particular reference to the ISSR Images), primary attention is directed to the arrows that are marked with an "*" since these arrows again represent markers which can be used to differentiate one variety from another.** In the discussion provided below, primary attention will be directed to the differentiation of Moravian 69 from its parental varieties (AC84-25-3, AC87-29-12, C91-194, and 96ACK-19) as will be more fully explained in the following discussion.

As shown in the photograph of Attachment G-4, barley variety Moravian 69 is clearly distinguished from one or more of the above-listed parental varieties. This determination is based on the following factors and information:

1. **Arrow No. 2:** Regarding the marker associated with Arrow No. 2, a band is **present** for Moravian 69, but is **absent** from parental varieties AC84-25-3 and C91-194. This situation is further reflected in the Data Table which accompanies Attachment G-4 (see, in particular, the highlighted portions of the Data Table [with all of the highlighting being shown in various shades of grey in the Data Table]).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental varieties: (A) AC84-25-3; and (B) C91-194.**

2. **Arrow No. 3:** Regarding the marker associated with Arrow No. 3, a band is **present** for Moravian 69, but is **absent** from parental variety C91-194. This situation is further reflected in the Data Table which accompanies Attachment G-4 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental variety C91-194.**

3. **Arrow No. 10:** Regarding the marker associated with Arrow No. 10, a band is **absent** from Moravian 69, but is **present** for parental varieties AC84-25-3 and C91-194. This situation is further reflected in the Data Table which accompanies Attachment G-4 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental varieties: (A) AC84-25-3; and (B) C91-194.**

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ISSR IMAGE NO. 3

As shown in the photograph of Attachment G-5, barley variety Moravian 69 is clearly distinguished from one or more of the above-listed parental varieties. This determination is based on the following factors and information:

1. **Arrow No. 2:** Regarding the marker associated with Arrow No. 2, a band is **present** for Moravian 69, but is **absent** from parental variety 96ACK-19. This situation is further reflected in the Data Table which accompanies Attachment G-5 (see, in particular, the highlighted portions of the Data Table)).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental variety 96ACK-19.**

2. **Arrow No. 4:** Regarding the marker associated with Arrow No. 4, a band is **present** for Moravian 69, but is **absent** from parental variety AC87-29-12. This situation is further reflected in the Data Table which accompanies Attachment G-5 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental variety AC87-29-12.**

3. **Arrow No. 8:** Regarding the marker associated with Arrow No. 8, a band is **present** for Moravian 69, but is **absent** from parental varieties AC84-25-3 and 96ACK-19. This situation is further reflected in the Data Table which accompanies Attachment G-5 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental varieties: (A) AC84-25-3; and (B) 96ACK-19.**

4. **Arrow No. 9:** Regarding the marker associated with Arrow No. 9, a band is **absent** from Moravian 69, but is **present** for parental variety AC84-25-3. This situation is further reflected in the Data Table which accompanies Attachment G-5 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental variety AC84-25-3.**

5. **Arrow No. 11:** Regarding the marker associated with Arrow No. 11, a band is **present** for Moravian 69, but is **absent** from parental varieties AC84-25-3 and 96ACK-19. This situation is further reflected in the Data Table which accompanies Attachment G-5 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental varieties: (A) AC84-25-3; and (B) 96ACK-19.**

*****ISSR IMAGE NO. 4*****

This particular ISSR IMAGE (Attachment G-6) contains no distinguishing information (see also the Data Table which accompanies Attachment G-6). However, ISSR Image No. 4 is being included herewith in order to present a full and complete disclosure.

*****ISSR IMAGE NO. 5*****

As shown in the photograph of Attachment G-7, barley variety Moravian 69 is clearly distinguished from one or more of the above-listed parental varieties. This determination is based on the following factors and information:

1. **Arrow No. 3:** Regarding the marker associated with Arrow No. 3, a band is **absent** from Moravian 69, but is **present** for parental variety AC87-29-12. This situation is further reflected in the Data Table which accompanies Attachment G-7

(see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental variety AC87-29-12.**

2. **Arrow No. 8:** Regarding the marker associated with Arrow No. 8, a band is **present** for Moravian 69, but is **absent** from parental varieties AC87-29-12 and 96ACK-19. This situation is further reflected in the Data Table which accompanies Attachment G-7 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental varieties: (A) AC87-29-12; and (B) 96ACK-19.**

*****ISSR IMAGE NO. 6*****

As shown in the photograph of Attachment G-8, barley variety Moravian 69 is clearly distinguished from one or more of the above-listed parental varieties. This determination is based on the following factors and information:

1. **Arrow No. 6:** Regarding the marker associated with Arrow No. 6, a band is **present** for Moravian 69, but is **absent** from parental varieties AC84-25-3 and C91-194. This situation is further reflected in the Data Table which accompanies Attachment G-8 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental varieties: (A) AC84-25-3; and (B) C91-194.**

ISSR IMAGE NO. 7

As shown in the photograph of Attachment G-9, barley variety Moravian 69 is clearly distinguished from one or more of the above-listed parental varieties. This determination is based on the following factors and information:

1. **Arrow No. 4:** Regarding the marker associated with Arrow No. 4, a band is **present** for Moravian 69, but is **absent** from parental varieties AC84-25-3 and 96ACK-19. This situation is further reflected in the Data Table which accompanies Attachment G-9 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental varieties: (A) AC84-25-3; and (B) 96ACK-19.**

2. **Arrow No. 9:** Regarding the marker associated with Arrow No. 9, a band is **present** for Moravian 69, but is **absent** from parental varieties AC84-25-3, AC87-29-12, and C91-194. This situation is further reflected in the Data Table which accompanies Attachment G-9 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental varieties: (A) AC84-25-3; (B) AC87-29-12; and (C) C91-194.**

3. **Arrow No. 12:** Regarding the marker associated with Arrow No. 12, a band is **present** for Moravian 69, but is **absent** from parental variety 96ACK-19. This situation is further reflected in the Data Table which accompanies Attachment G-9 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental variety 96ACK-19.**

4. **Arrow No. 13:** Regarding the marker associated with Arrow No. 13, a band is **absent** from Moravian 69, but is **present**

for parental varieties AC84-25-3 and C91-194. This situation is further reflected in the Data Table which accompanies Attachment G-9 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental varieties: (A) AC84-25-3; and (B) C91-194.**

5. **Arrow No. 14:** Regarding the marker associated with Arrow No. 14, a band is **absent** from Moravian 69, but is **present** for parental varieties AC84-25-3, AC87-29-12, and C91-194. This situation is further reflected in the Data Table which accompanies Attachment G-9 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from parental varieties: (A) AC84-25-3; (B) AC87-29-12; and (C) C91-194.**

*****DATA SUMMARIES*****

A. ISSR IMAGE NO. 1

[i] Arrow No. 2: Demonstrates that **Moravian 69** is clearly distinguishable from parental varieties: (A) **AC84-25-3**; and (B) **C91-194**;

[ii] Arrow No. 3: Demonstrates that **Moravian 69** is clearly distinguishable from parental variety **C91-194**; and

[iii] Arrow No. 10: Demonstrates that **Moravian 69** is clearly distinguishable from parental varieties: (A) **AC84-25-3**; and (B) **C91-194**.

B. ISSR IMAGE NO. 3

[i] Arrow No. 2: Demonstrates that **Moravian 69** is clearly distinguishable from parental variety **96ACK-19**;

[ii] Arrow No. 4: Demonstrates that **Moravian 69** is clearly distinguishable from parental variety **AC87-29-12**;

[iii] Arrow No. 8: Demonstrates that **Moravian 69** is clearly distinguishable from parental varieties: (A) **AC84-25-3**; and (B) **96ACK-19**;

[iv] Arrow No. 9: Demonstrates that **Moravian 69** is clearly distinguishable from parental variety **AC84-25-3**; and

[v] Arrow No. 11: Demonstrates that **Moravian 69** is clearly distinguishable from parental varieties: (A) **AC84-25-3**; and (B) **96ACK-19**.

C. ISSR IMAGE NO. 4

No pertinent information was contained in this Image as stated above.

D. ISSR IMAGE NO. 5

[i] Arrow No. 3: Demonstrates that **Moravian 69** is clearly distinguishable from parental variety **AC87-29-12**; and

[ii] Arrow No. 8: Demonstrates that **Moravian 69** is clearly distinguishable from parental varieties: (A) **AC87-29-12**; and (B) **96ACK-19**.

E. ISSR IMAGE NO. 6

[i] Arrow No. 6: Demonstrates that **Moravian 69** is clearly distinguishable from parental varieties: (A) **AC84-25-3**; and (B) **C91-194**.

F. ISSR IMAGE NO. 7

[i] Arrow No. 4: Demonstrates that **Moravian 69** is clearly distinguishable from parental varieties: (A) **AC84-25-3**; and (B) **96ACK-19**;

[ii] Arrow No. 9: Demonstrates that **Moravian 69** is clearly distinguishable from parental varieties: (A) **AC84-25-3**; (B) **AC87-29-12**; and (C) **C91-194**;

[iii] Arrow No. 12: Demonstrates that **Moravian 69** is clearly distinguishable from parental variety **96ACK-19**;

[iv] Arrow No. 13: Demonstrates that **Moravian 69** is clearly distinguishable from parental varieties: (A) **AC84-25-3**; and (B) **C91-194**; and

[v] Arrow No. 14: Demonstrates that **Moravian 69** is clearly distinguishable from parental varieties: (A) **AC84-25-3**; (B) **AC87-29-12**; and (C) **C91-194**.

3. Genetic Distance Report

Also included in this section of the present Exhibit is an additional item known as a "Genetic Distance Report" (Attachment G-10). While this information is not required in order to demonstrate the overall distinctness of the Moravian 69 barley variety (with the other evidence presented herein individually and collectively supporting a finding that Moravian 69 is totally novel, unique and entitled to legal protection under the Plant Variety laws), it is being offered as additional support for the conclusions expressed herein regarding the clear novelty of Moravian 69 relative to the parental varieties listed above (namely, AC84-25-3, AC87-29-12, C91-194, and 96ACK-19).

The Genetic Distance Report which accompanies the current application as Attachment G-10 was generated by a computer program which determines the overall degree of dissimilarity between one or more varieties. The computer program specifically calculates the number of markers that each variety has in common with one or more other varieties, as well as the number of markers that are different for such varieties. The greater the percentage difference, the more distinct the variety is relative to the other varieties being tested. It should be noted that, regarding Moravian 69, the data presented in the Genetic Distance Report clearly demonstrates that a significant degree of difference exists between Moravian 69 and the parental varieties recited above.

With reference to the Genetic Distance Report of Attachment G-10, the following ID Codes are applicable:

- A. Code No. 1 = AC84-25-3
- B. Code No. 2 = AC87-29-12
- C. Code No. 3 = C91-194

- D. Code No. 4 = Moravian 69
E. Code No. 5 = 96ACK-19

In order to use the Genetic Distance Report, the Table listed in the report is consulted. For example, to compare Moravian 69 to 96ACK-19, the Code No. for Moravian 69 is first located at the far left side of the Table (Code No. 4). Then, the Code No. for 96ACK-19 is located along the top of the Table (Code No. 5). The "intersection point" associated with these Code Nos. is then located (which is found by moving horizontally across the Table along the row corresponding to Code No. 4 and stopping at the column corresponding to Code No. 5). The number at this intersection point is "0.8983". This number is then subtracted from "1" to yield "0.1017" which is multiplied by "100" to give approximately 10% (rounded to the nearest whole number). In accordance with this number, it can be concluded that Moravian 69 is approximately 10% different from 96ACK-19 based on the markers employed in the above-listed study. Using the approach outlined herein, the following calculated differences (rounded to the nearest whole number) between Moravian 69 and the parental varieties listed above were shown to exist:

1. Difference between Moravian 69 and AC84-25-3 = 81%
2. Difference between Moravian 69 and AC87-29-12 = 91%
3. Difference between Moravian 69 and C91-194 = 87%
4. Difference between Moravian 69 and 96ACK-19 = 10%

Accordingly, a significant degree of difference exists between Moravian 69 and its parents as is clearly and definitively demonstrated above, thereby supporting the novelty of Moravian 69.

*******CONCLUSIONS REGARDING THE VARIETIES LISTED ABOVE*******

In accordance with the information and test data presented above, Moravian 69 is clearly distinctive and distinguishable from all of the parental varieties associated therewith, namely, AC84-25-3, AC87-29-12, C91-194, and 96ACK-19. This is demonstrated in a definitive manner by the ISSR Images discussed herein which include numerous instances where Moravian 69 is indicated to be distinctively different on a genetic level from its parents. For example, see Arrow No. 14 in ISSR Image No. 7 (which distinguishes Moravian 69 from parental varieties AC84-25-

3, AC87-29-12, and C91-194). Regarding the remaining parental variety (namely, 96ACK-19), see Arrow No. 12 in ISSR Image No. 7 which distinguishes Moravian 69 from 96ACK-19. Other ISSR Images set forth in this report provide additional evidence wherein Moravian 69 is distinguished from its parental varieties. Accordingly, the genetic data presented herein offers clear, substantial, and undeniable support for a conclusion that Moravian 69 is entirely distinctive compared with the parental varieties recited at the beginning of this paragraph. It is therefore believed that this information, by itself, is sufficient to support the allowance of the current application. Thus, the analysis could stop at this point. However, agronomic data will be presented later in this Exhibit which provides even further support for the approval of this case. The agronomic data listed below could likewise stand alone as evidence of novelty regarding Moravian 69. Accordingly, when both the genetic and agronomic data listed in this Exhibit are considered collectively, they provide undeniable support for the unique nature of Moravian 69.

II. PART 2: Moravian 69 v. Moravian 14 and Moravian 37

A complex and detailed genetic testing protocol was undertaken in connection with Moravian 69, as well as the following varieties: "Moravian 37" and "Moravian 14" which are considered by Applicant to be some of the closest (if not the closest) varieties to Moravian 69. The genetic tests outlined in this section provide definitive evidence that Moravian 69 is entirely distinct and unique relative to Moravian 14 and Moravian 37.

The genetic tests in this section of Exhibit B were again conducted by STA Laboratories, Inc. (1821 Vista View Drive, Longmont, CO [USA] 80504; Telephone: 1-303-651-6417; Internet: www.stalabs.com) which is highly experienced in testing processes of the type outlined herein. Likewise, the following explanation of the testing procedures that were used, background information and text associated therewith, data tables, and photographs which accompany this report were generally provided by STA Laboratories, Inc. which is hereby acknowledged.

1. BACKGROUND

As will be discussed extensively in this section of Exhibit B, a DNA analysis was conducted on three (3) barley varieties (namely, Moravian 69 [also known as "M69"], Moravian 14 [also known as "M14"], and Moravian 37 [also known as "M37"]).

The DNA analysis that was conducted in connection with the foregoing varieties again involved "Polymerase Chain Reaction" (e.g. "PCR") technology which enabled a unique DNA "fingerprint" to be obtained for each of the aforementioned varieties. In particular, 20 - 30 seeds associated with each of the above-listed barley varieties were initially grown in pots in a greenhouse environment. Two DNA extractions were then performed for each of the three test varieties. DNA extractions are generally discussed in, for example, Khasa, P.D., et al., "Isolation, Characterization, and Inheritance of Microsatellite Loci in Alpine Larch and Western Larch", Genome, 43:439 - 448 (2000) which is incorporated herein by reference. A copy of this article is attached hereto for reference purposes as Attachment G-1 as previously noted. Each DNA extraction was composed of a bulk of 10 - 20 different individual plants which were harvested and freeze-dried prior to DNA extraction. PCR (e.g. "Polymerase Chain Reaction") analysis was then performed using a set of eight "ISSR" (e.g. "Inter Simple Sequence Repeat" - discussed above) primers/markers to genotype the above-listed barley varieties. The eight ISSR markers were run on each of the two bulk DNA extractions for each of the three test varieties resulting in two repetitions for each of the samples. It should also be noted that gel images (photographs) of the eight ISSR markers will likewise be provided in this report and are discussed extensively below.

Having presented a brief explanation of the testing procedures that were employed, it should also be noted that, unless otherwise stated herein, the analytical methods, practices, procedures, and testing regimens associated with the current set of tests (e.g. involving Moravian 69 v. Moravian 14 and Moravian 37) are substantially the same as those which were set forth above in Part 1 of Exhibit B (which involved a comparative analysis of Moravian 69 v. AC84-25-3, AC87-29-12, C91-194, and 96ACK-19). In this regard, the information which was previously presented in Part 1 regarding the analytical methods, practices, procedures, and testing regimens associated therewith is incorporated in this portion (Part 2) of the current overview by reference and is fully applicable thereto.

2. Test Data

Preliminary Points of Explanatory Information Regarding the Genetic Data Presented Below:

Each of the ISSR ("Inter Simple Sequence Repeat") Images referenced below represents a single ISSR primer. Each ISSR primer produces multiple "bands" which are referred to as "markers". As indicated above, markers detect the genetic makeup of a variety at a specific location in the genome of the variety. Also included in order to assist in the explanation of each ISSR Image is a Data Table which summarizes the information portrayed by the ISSR Images in tabular form.

With continued reference to the information to be presented and discussed below, the markers (e.g. the bands associated with the ISSR Images) are scored for their presence or absence. Varieties which have a band (as shown in the ISSR Images) for a given marker are genetically similar to each other for that particular marker. Likewise, varieties which lack a band (as shown in the ISSR Images) for a given marker are genetically similar to each other but, on the other hand are genetically **different** from those varieties which have a band for the marker under consideration.

In the ISSR Images to be discussed extensively below, a "DNA size ladder" is presented along the left side of the sheet which contains the Images. This DNA size ladder basically involves approximate "molecular weight" ("MW") values which can be used to identify which bands were scored and recorded. For a given molecular weight value in a particular ISSR Image, a variety which lacks a band at the designated molecular weight is genetically different from other varieties which do, in fact, have a band at the same molecular weight. Conversely, for a given molecular weight value in a particular ISSR Image, a variety which has a band at the designated molecular weight is genetically different from other varieties which do, in fact, lack a band at the same molecular weight. In this manner, varieties can clearly and definitively be distinguished from each other. As will be more fully explained in the following discussion, it is entirely clear that Moravian 69 is completely distinctive and novel compared with Moravian 14 and Moravian 37.

As shown in the photograph of Attachment G-11, barley variety Moravian 69 ("M69") is clearly distinguished from barley varieties Moravian 14 ("M14") and Moravian 37 ("M37"). This determination is based on the following factors and information:

ISSR IMAGE NO. 1

1. **BANDING PATTERN AT MW 1200 (MARKER NO. 1):** At this location, a band is **present** for Moravian 69, but is **absent** from Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table [with all of the highlighting being shown in various shades of grey in the Data Table]).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

2. **BANDING PATTERN AT MW 400 (MARKER NO. 4):** At this location, a band is **present** for Moravian 69, but is **absent** from Moravian 37. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 37.**

ISSR IMAGE NO. 2

This particular ISSR IMAGE (Attachment G-11) contains no distinguishing information (see also the Data Table which accompanies Attachment G-11). However, ISSR Image No. 2 is being included herewith in order to present a full and complete disclosure.

ISSR IMAGE NO. 3

1. **BANDING PATTERN AT MW 740 (MARKER NO. 8):** At this location, a band is **present** for Moravian 69, but is **absent** from Moravian 37. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 37.**

2. **BANDING PATTERN AT MW 350 (MARKER NO. 11):** At this location, a band is **present** for Moravian 69, but is **absent** from both Moravian 14 and Moravian 37. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from both Moravian 14 and Moravian 37.**

*****ISSR IMAGE NO. 4*****

1. **BANDING PATTERN AT MW 1100 (MARKER NO. 12):** At this location, a band is **present** for Moravian 69, but is **absent** from both Moravian 14 and Moravian 37. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from both Moravian 14 and Moravian 37.**

2. **BANDING PATTERN AT MW 630 (MARKER NO. 13):** At this location, a band is **present** for Moravian 69, but is **absent** from Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

3. **BANDING PATTERN AT MW 260 (MARKER NO. 14):** At this location, a band is **absent** from Moravian 69, but is **present** for Moravian 37. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 37.**

4. **BANDING PATTERN AT MW 240 (MARKER NO. 15):** At this

location, a band is **absent** from Moravian 69, but is **present** for Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

*****ISSR IMAGE NO. 5*****

1. **BANDING PATTERN AT MW 710 (MARKER NO. 16):** At this location, a band is **absent** from Moravian 69, but is **present** for Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

2. **BANDING PATTERN AT MW 700 (MARKER NO. 17):** At this location, a band is **present** for Moravian 69, but is **absent** from Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

3. **BANDING PATTERN AT MW 690 (MARKER NO. 18):** At this location, a band is **present** for Moravian 69, but is **absent** from Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

4. **BANDING PATTERN AT MW 500 (MARKER NO. 20):** At this location, a band is **present** for Moravian 69, but is **absent** from Moravian 37. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the

highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 37.**

5. **BANDING PATTERN AT MW 250 (MARKER NO. 22):** At this location, a band is **absent** from Moravian 69, but is **present** for Moravian 37. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 37.**

6. **BANDING PATTERN AT MW 230 (MARKER NO. 23):** At this location, a band is **absent** from Moravian 69, but is **present** for Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

*****ISSR IMAGE NO. 6*****

1. **BANDING PATTERN AT MW 590 (MARKER NO. 26):** At this location, a band is **absent** from Moravian 69, but is **present** for Moravian 37. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 37.**

2. **BANDING PATTERN AT MW 240 (MARKER NO. 29):** At this location, a band is **present** for Moravian 69, but is **absent** from Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth

above, Moravian 69 is clearly distinguishable from Moravian 14.

3. **BANDING PATTERN AT MW 230 (MARKER NO. 30):** At this location, a band is **absent** from Moravian 69, but is **present** for Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

*****ISSR IMAGE NO. 7*****

1. **BANDING PATTERN AT MW 350 (MARKER NO. 32):** At this location, a band is **absent** from Moravian 69, but is **present** for Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

2. **BANDING PATTERN AT MW 340 (MARKER NO. 33):** At this location, a band is **present** for Moravian 69, but is **absent** from Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

*****ISSR IMAGE NO. 8*****

1. **BANDING PATTERN AT MW 1100 (MARKER NO. 35):** At this location, a band is **present** for Moravian 69, but is **absent** from both Moravian 14 and Moravian 37. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth

above, Moravian 69 is clearly distinguishable from both Moravian 14 and Moravian 37.

2. **BANDING PATTERN AT MW 1050 (MARKER NO. 36):** At this location, a band is **absent** from Moravian 69, but is **present** for both Moravian 14 and Moravian 37. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from both Moravian 14 and Moravian 37.**

3. **BANDING PATTERN AT MW 720 (MARKER NO. 38):** At this location, a band is **absent** from Moravian 69, but is **present** for Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

4. **BANDING PATTERN AT MW 700 (MARKER NO. 39):** At this location, a band is **present** for Moravian 69, but is **absent** from Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

5. **BANDING PATTERN AT MW 640 (MARKER NO. 40):** At this location, a band is **present** for Moravian 69, but is **absent** from Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

6. **BANDING PATTERN AT MW 590 (MARKER NO. 42):** At this

location, a band is **absent** from Moravian 69, but is **present** for Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

7. **BANDING PATTERN AT MW 280 (MARKER NO. 44):** At this location, a band is **absent** from Moravian 69, but is **present** for Moravian 37. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 37.**

8. **BANDING PATTERN AT MW 240 (MARKER NO. 45):** At this location, a band is **absent** from Moravian 69, but is **present** for Moravian 14. This situation is further reflected in the Data Table which accompanies Attachment G-11 (see, in particular, the highlighted portions of the Data Table).

CONCLUSIONS: In accordance with the test results set forth above, **Moravian 69 is clearly distinguishable from Moravian 14.**

*******DATA SUMMARIES*******

A. ISSR IMAGE NO. 1

[i] **BANDING PATTERN AT MW 1200 (MARKER NO. 1):**
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**; and

[ii] **BANDING PATTERN AT MW 400 (MARKER NO. 4):**
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 37.**

B. ISSR IMAGE NO. 2

No pertinent information is contained in this image as noted

above.

C. ISSR IMAGE NO. 3

[i] BANDING PATTERN AT MW 740 (MARKER NO. 8):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 37**; and

[ii] BANDING PATTERN AT MW 350 (MARKER NO. 11):
Demonstrates that **Moravian 69** is clearly distinguishable from both **Moravian 14** and **Moravian 37**.

D. ISSR IMAGE NO. 4

[i] BANDING PATTERN AT MW 1100 (MARKER NO. 12):
Demonstrates that **Moravian 69** is clearly distinguishable from both **Moravian 14** and **Moravian 37**;

[ii] BANDING PATTERN AT MW 630 (MARKER NO. 13):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**;

[iii] BANDING PATTERN AT MW 260 (MARKER NO. 14):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 37**; and

[iv] BANDING PATTERN AT MW 240 (MARKER NO. 15):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**.

E. ISSR IMAGE NO. 5

[i] BANDING PATTERN AT MW 710 (MARKER NO. 16):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**;

[ii] BANDING PATTERN AT MW 700 (MARKER NO. 17):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**;

[iii] BANDING PATTERN AT MW 690 (MARKER NO. 18):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**;

[iv] BANDING PATTERN AT MW 500 (MARKER NO. 20):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 37**;

[v] BANDING PATTERN AT MW 250 (MARKER NO. 22):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 37**; and

[vi] BANDING PATTERN AT MW 230 (MARKER NO. 23):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**.

F. ISSR IMAGE NO. 6

[i] BANDING PATTERN AT MW 590 (MARKER NO. 26):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 37**;

[ii] BANDING PATTERN AT MW 240 (MARKER NO. 29):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**; and

[iii] BANDING PATTERN AT MW 230 (MARKER NO. 30):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**.

G. ISSR IMAGE NO. 7

[i] BANDING PATTERN AT MW 350 (MARKER NO. 32):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**; and

[ii] BANDING PATTERN AT MW 340 (MARKER NO. 33):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**.

H. ISSR IMAGE NO. 8

[i] BANDING PATTERN AT MW 1100 (MARKER NO. 35):
Demonstrates that **Moravian 69** is clearly distinguishable from both **Moravian 14** and **Moravian 37**;

[ii] BANDING PATTERN AT MW 1050 (MARKER NO. 36):
Demonstrates that **Moravian 69** is clearly distinguishable from both **Moravian 14** and **Moravian 37**;

[iii] BANDING PATTERN AT MW 720 (MARKER NO. 38):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**;

[iv] BANDING PATTERN AT MW 700 (MARKER NO. 39):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**;

[v] BANDING PATTERN AT MW 640 (MARKER NO. 40):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**;

[vi] BANDING PATTERN AT MW 590 (MARKER NO. 42):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**;

[vii] BANDING PATTERN AT MW 280 (MARKER NO. 44):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 37**; and

[viii] BANDING PATTERN AT MW 240 (MARKER NO. 45):
Demonstrates that **Moravian 69** is clearly distinguishable from **Moravian 14**.

3. Genetic Distance Report

Also included in this section of the present Exhibit is an additional item known as a "Genetic Distance Report" (Attachment G-12). While this information is not required in order demonstrate the overall distinctness of the Moravian 69 barley variety (with the other evidence presented herein individually and collectively supporting a finding that Moravian 69 is totally novel, unique and entitled to legal protection under the Plant Variety laws), it is being offered as additional support for the conclusions expressed herein regarding the clear novelty of Moravian 69 relative to the varieties listed above (namely, Moravian 14 and Moravian 37).

The Genetic Distance Report which accompanies the current application as Attachment G-12 was generated by a computer program which determines the overall degree of dissimilarity

between one or more varieties. The computer program specifically calculates the number of markers that each variety has in common with one or more other varieties, as well as the number of markers that are different for such varieties. The greater the percentage difference, the more distinct the variety is relative to the other varieties being tested. It should be noted that, regarding Moravian 69, the data presented in the Genetic Distance Report clearly demonstrates that a significant degree of difference exists between Moravian 69 and the varieties recited above (e.g. Moravian 14 and Moravian 37).

With reference to the Genetic Distance Report of Attachment G-12, the following ID Codes are applicable:

- A. Code M69 = (Moravian 69)
- B. Code M37 = (Moravian 37)
- C. Code M14 = (Moravian 14)

In order to use the Genetic Distance Report, the Table listed in the report is consulted. For example, in order to compare Moravian 69 to Moravian 37, the Code No. for Moravian 69 is first located at the far left side of the Table (Code M69). Then, the Code No. for Moravian 37 is located along the top of the Table (Code M37). The "intersection point" associated with these Code Nos. is then located (which is found by moving horizontally across the Table along the row corresponding to M69 and stopping at the column corresponding to M37). The number at this intersection point is "0.7556". This number is then subtracted from "1" to yield "0.2444" which is multiplied by "100" to give approximately 24% (rounded to the nearest whole number). In accordance with this number, it can be concluded that Moravian 69 is approximately 24% different from Moravian 37 based on the markers employed in the above-listed study. Using the approach outlined herein, the following calculated differences (rounded to the nearest whole number) between Moravian 69 and the varieties listed above were shown to exist:

- 1. Difference between Moravian 69 and Moravian 14 = 44%
- 2. Difference between Moravian 69 and Moravian 37 = 24%

Accordingly, a significant degree of difference exists between Moravian 69 and: (A) Moravian 14; and (B) Moravian 37 as is clearly and definitively demonstrated above, thereby supporting the novelty of Moravian 69.

<<<<<<<<<<OVERALL CONCLUSIONS>>>>>>>>>>

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the specific primers that were used in connection with the genetic test data provided by Applicant in support of the novelty of barley variety Moravian 69. Identifying information involving the primers that were used is as follows:

PRIMER	SEQUENCE
ISSR1	HVH CAC ACA CAC ACA CAT
ISSR2	TCC TCC TCC TCC TCC RY
ISSR3	HVH TGT GTG TGT GTG TGT
ISSR4	DBD ACA CAC ACA CAC ACA
ISSR5	VBV ACA CAC ACA CAC AC
ISSR6	BDB CAC ACA CAC ACA CA
ISSR7	BDV AGA GAG AGA GAG AG
ISSR8	BDB ACA CAC ACA CAC AC

Regarding the letters which appear in the above-stated sequences, they stand for the following materials:

A = Adenine

G = Guanine

T = Thymine

C = Cytosine

With respect to H, V, R, Y, D, and B, these items represent "wobble" nucleotide codes, with each code letter actually involving various mixtures of A, G, T, and/or C as follows:

H = A, C, and T

V = A, C, and G

R = A and G

Y = C and T

D = A, G, and T

B = C, G, and T

In order to further explain the "wobble" code situation outlined above, primer ISSR1 will be explained in greater detail (with the general information and concepts set forth herein regarding ISSR1 likewise being applicable to the other primers listed above). With respect to ISSR1, the primer code is as follows: HVH CAC ACA CAC ACA CAT. In this sequence, H and V will involve one of the nucleotides in the mixtures set forth above for H and V (e.g. H = A, C, or T and V = A, C, or G). As a result, the following primers will be produced and included in the primer solution associated with ISSR1:

AAA CAC ACA CAC ACA CAT
ACA CAC ACA CAC ACA CAT
AGA CAC ACA CAC ACA CAT
AAC CAC ACA CAC ACA CAT
ACC CAC ACA CAC ACA CAT
AGC CAC ACA CAC ACA CAT
AAT CAC ACA CAC ACA CAT
ACT CAC ACA CAC ACA CAT
AGT CAC ACA CAC ACA CAT...

and so forth until all possible combinations are made. In other words, when the ISSR1 primer is synthesized, the mixture of nucleotides associated with H is introduced at position one, the mixture of nucleotides associated with V is introduced at position two, and the mixture of nucleotides associated with H is introduced at position three so that all possible combinations of nucleotides are produced as noted above. This is a standard genetic technique which is well-known, understood, and in common use.

It is believed that the primer data recited above provides a full and complete explanation of the primers that were used to conduct the genetic tests set forth in Exhibit B of the present application. The genetic data listed in Exhibit B constitutes clear and definitive evidence of novelty and distinctness involving barley variety Moravian 69.

B. Agronomic Data

Agronomic data was collected and reviewed on the barley varieties which have been determined to be the closest to barley variety Moravian 69. These barley varieties include: (1) Moravian 14; and (2) Moravian 37 which are likewise discussed in Section A of this Exhibit (involving "Genetic Data") and in Exhibit C (attached as part of the current Application). This agronomic data clearly distinguishes Moravian 69 from the above-mentioned varieties (namely, Moravian 14 and Moravian 37). In addition, agronomic data was collected on the parental varieties associated with Moravian 69 as recited in Exhibit A which is attached as part of the present Application. These parental varieties (namely, the ones that are known and currently available) include: (1) "96ACK-19"; (2) "C91-194"; (3) "AC87-29-12"; and (4) "AC84-25-3" as outlined in Exhibit A.

The tests discussed below were designed to compare Moravian 69 with all of the varieties listed herein. The objective of the testing processes was to provide an unbiased appraisal and evaluation of Moravian 69 relative to Moravian 14, Moravian 37, 96ACK-19, C91-194, AC87-29-12, and AC84-25-3 from a comparative agronomic standpoint. Basically, the tests summarize trials conducted by the Coors Brewing Company in multiple years and locations including: (1) Burley, ID (USA); (2) Center, CO (USA); (3) Huntley, MT (USA); and (4) Windsor, CO (USA).

Virtually all of the test data provided below includes a "Least Significant Difference" (LSD) statistic (except where otherwise indicated in the accompanying attachments [e.g. Data Tables]). Where "LSD" statistics are given, they are presented at the 0.05% error level and are an aid in comparing varieties. A Coefficient of Variation ("C.V." or "COV") statistic is likewise included in the accompanying attachments (e.g. Data Tables) except where otherwise indicated. This parameter provides a general measure of the precision associated with each experimental trial. For the record and reflective of the information presented herein, any ANOVAs associated with the test data were run with "Fisher's Pairwise Comparisons" at a 0.05% individual error rate. Furthermore, the present variety of interest for which protection is sought will be identified in the Data Tables discussed below as "C69", "C98-36-5" and/or "Moravian 69" which are the same and shall thus be considered equivalent terms. As previously stated, C69 and C98-36-5 were temporary/experimental names for the barley variety being claimed in this application which was later changed to Moravian 69 (See the historical discussion presented in Exhibit A).

There are **clear and substantial differences** in important genetic, morphological, and phenotypical characteristics when Moravian 69 is compared with the above-listed varieties, namely: (1) those which are considered to be closest to Moravian 69 (e.g. Moravian 14 and Moravian 37); and (2) parental varieties 96ACK-19, C91-194, AC87-29-12, and AC84-25-3. These differences overwhelmingly support the allowability of the present application under all applicable statutory guidelines. The data of interest and primary concern will now be discussed as follows, with this data further supplementing the genetic information provided at the beginning of this Exhibit in Section A (and clearly supporting the novelty of Moravian 69 as expressed herein).

Furthermore, the test results discussed below are of particular relevance in connection with Moravian 14 and Moravian 37 which are considered to be the closest varieties relative to Moravian 69 as previously stated. Specifically, the following test data (along with the genetic information recited in Section A of this Exhibit) clearly demonstrates that Moravian 69 is distinctive relative to Moravian 14 and Moravian 37 (as well as 96ACK-19, C91-194, AC87-29-12, and AC84-25-3) with reference to **multiple characteristics** and not just a single item. This multiplicity of differences (alone or combined with the genetic data set forth herein) overwhelmingly supports a determination that Moravian 69 is entitled to plant variety protection over Moravian 14, Moravian 37, 96ACK-19, C91-194, AC87-29-12, AC84-25-3, and any other barley varieties.

In order to assist in assessing the data and comparisons presented below (with particular reference to the Data Tables associated with this Exhibit), the following definitions are applicable (which are standard, conventional, and well-known in this technical field):

- A. **Heading Date** = The number of days from planting (or other specified date) that it takes for 50% of the heads to emerge from the boot;
- B. **Height** = Plant Height of the barley plants in inches;
- C. **Lodging** = The percent of the plot area that was not standing straight prior to harvest;
- D. **Bu/Ac** = "Bushels per Acre";
- E. **Yield in Bu/Ac** = The actual amount of barley seed that was obtained in Bushels per Acre;

F. Yield in Lbs/Ac @ 12% H₂O (or 12.5% H₂O) = A corrected value used to represent the pounds of barley seed at 12% (or 12.5%) moisture. This value is used so that all varieties from a given trial can be compared since the moisture level varies significantly by variety and can have a substantial impact on weight. The formula used for this calculation is as follows:
 $(\text{Lbs/Plot} \times 820.6 \times [1 - \% \text{ Grain Moisture (see definition below)} \times 0.01]) \times 1.142857143;$

G. Yield in Lbs/Ac over 6/64" = A corrected value used to represent the Lbs/Ac (Pounds per Acre) of "plump" seed in a given sample. The term "plump" as used in connection with the barley seed is defined to involve the particular seed which are associated with the % Screen over 6/64" value (generally defined to involve the percentage of seed which remain from a 100 gram seed sample after being run on a shaker for 20 cycles using a 6/64 inch screen). The corrected value associated with the Lbs/Ac over 6/64" parameter is obtained using the value determined for Lbs/Ac @ 12% [or 12.5%] H₂O (see definition above). In particular, the formula used for this calculation is as follows:
 $(\text{Lbs/Ac @ 12\% [or 12.5\%] H}_2\text{O} \times \% \text{ Screen Over 6/64" [see definition above]} \times 0.01);$

H. Test Wt. = "Test Weight" = A weight-by-unit volume measurement involving the barley seed being tested which is initially measured in Grams/Dry Quart and then converted using a test weight scale into a test weight value which is equal to Lbs/Bu (Pounds/Bushel);

I. Plump Grain % = The percentage of barley seed which are considered to be "plump" in accordance with the definition of this term that was listed above (see Item [G]);

J. Grain Moisture = A value involving the % moisture remaining in the harvested barley seed. It was determined in the current assessment using a Perten 9100 NIR Whole Grain Analyzer (Perten Instruments Inc. USA, 6444 South 6th Street Road, Springfield, IL 62717);

K. Color = A value on a scale from 0 - 100 with 0 being the darkest and 100 being the brightest seed color possible. It was determined in the current assessment using a Perten 9100 NIR Whole Grain Analyzer; and

L. % Grain Protein = A value involving the % protein present in the harvested barley seed. It was determined in the current assessment using a Perten 9100 NIR Whole Grain Analyzer.

*****TEST DATA*****

1. Moravian 69 v. Moravian 14 (one of the two varieties closest to Moravian 69 as previously stated).

As noted above in the first portion of this Exhibit which pertains to comparative genetic data (Section A), both Moravian 69 and Moravian 14 are characterized by distinctively different genetic profiles. This data constitutes definitive evidence of the unique nature of Moravian 69 relative to Moravian 14 and is sufficient, by itself, to support the allowability of Moravian 69 as a totally distinct variety compared with Moravian 14. However, as supplemental/extra evidence, the following agronomic differences and data are provided concerning Moravian 69 and Moravian 14:

[i] ****Moravian 69 has a later Heading Date compared with Moravian 14****

This key difference is clearly illustrated in:

A. The Data Table provided herewith as Attachment AG-1 (entitled "2002 SCVPT Data, Coors Farm Center, CO"). This Table sets forth a Heading Date (in days) of **69** for Moravian 69 v. a Heading Date (in days) of **61** for Moravian 14.

B. The Data Table provided herewith as Attachment AG-2 (entitled "2002 SIVPT Data, Coors Research Farm Burley, ID"). This Table sets forth a Heading Date (in days) of **72** for Moravian 69 v. a Heading Date (in days) of **65** for Moravian 14.

C. The Data Table provided herewith as Attachment AG-3 (entitled "2002 MTVPT Data, Huntley, MT"). This Table sets forth a Heading Date (in days) of **176** for Moravian 69 v. a Heading Date (in days) of **169** for Moravian 14.

D. The Data Table provided herewith as Attachment AG-4 (entitled "2003 SCVPT Data, Coors Farm Center, CO"). This Table sets forth a Heading Date (in days) of **50** for Moravian 69 v. a Heading Date (in days) of **39** for Moravian 14.

E. The Data Table provided herewith as Attachment AG-5 (entitled "2004 SIVPT Data, Coors Research Farm Burley, ID"). This Table sets forth a Heading Date (in days) of **72** for Moravian 69 v. a Heading Date (in days) of **69** for Moravian 14.

[iii] **Moravian 69 has a lower Test Weight compared with Moravian 14**

This key difference is clearly illustrated in:

A. The Data Table provided herewith as Attachment AG-1 (entitled "2002 SCVPT Data, Coors Farm Center, CO"). This Table sets forth a Test Weight (in lbs/bu) of **53.4** for Moravian 69 v. a Test Weight (in lbs/bu) of **55.6** for Moravian 14.

B. The Data Table provided herewith as Attachment AG-2 (entitled "2002 SIVPT Data, Coors Research Farm Burley, ID"). This Table sets forth a Test Weight (in lbs/bu) of **52.8** for Moravian 69 v. a Test Weight (in lbs/bu) of **55.8** for Moravian 14.

C. The Data Table provided herewith as Attachment AG-3 (entitled "2002 MTVPT Data, Huntley, MT"). This Table sets forth a Test Weight (in lbs/bu) of **46.3** for Moravian 69 v. a Test Weight (in lbs/bu) of **53.4** for Moravian 14.

D. The Data Table provided herewith as Attachment AG-4 (entitled "2003 SCVPT Data, Coors Farm Center, CO"). This Table sets forth a Test Weight (in lbs/bu) of **53.4** for Moravian 69 v. a Test Weight (lbs/bu) of **56.8** for Moravian 14.

E. The Data Table provided herewith as Attachment AG-5 (entitled "2004 SIVPT Data, Coors Research Farm Burley, ID"). This Table sets forth a Test Weight (in lbs/bu) of **53.4** for Moravian 69 v. a Test Weight (in lbs/bu) of **55.9** for Moravian 14.

F. The Data Table provided herewith as Attachment AG-6 (entitled "2004 NCVPT Data, Windsor, CO"). This Table sets forth a Test Weight (in lbs/bu) of **47.5** for Moravian 69 v. a Test Weight (in lbs/bu) of **50.3** for Moravian 14.

[iii] **Moravian 69 has a lower Grain Moisture compared with Moravian 14**

This key difference is clearly illustrated in:

A. The Data Table provided herewith as Attachment AG-1 (entitled "2002 SCVPT Data, Coors Farm Center, CO"). This Table sets forth a Grain Moisture (in %) of **12.2** for Moravian 69 v. a Grain Moisture (in %) of **12.3** for Moravian 14.

B. The Data Table provided herewith as Attachment AG-2 (entitled "2002 SIVPT Data, Coors Research Farm Burley, ID"). This Table sets forth a Grain Moisture (in %) of **10.1** for Moravian 69 v. a Grain Moisture (in %) of **10.4** for Moravian 14.

C. The Data Table provided herewith as Attachment AG-3 (entitled "2002 MTVPT Data, Huntley, MT"). This Table sets forth a Grain Moisture (in %) of **9.3** for Moravian 69 v. a Grain Moisture (in %) of **9.9** for Moravian 14.

D. The Data Table provided herewith as Attachment AG-4 (entitled "2003 SCVPT Data, Coors Farm Center, CO"). This Table sets forth a Grain Moisture (in %) of **10.1** for Moravian 69 v. a Grain Moisture (in %) of **10.2** for Moravian 14.

E. The Data Table provided herewith as Attachment AG-5 (entitled "2004 SIVPT Data, Coors Research Farm Burley, ID"). This Table sets forth a Grain Moisture (in %) of **10.3** for Moravian 69 v. a Grain Moisture (in %) of **10.7** for Moravian 14.

F. The Data Table provided herewith as Attachment AG-6 (entitled "2004 NCVPT Data, Windsor, CO"). This Table sets forth a Grain Moisture (in %) of **11.0** for Moravian 69 v. a Grain Moisture (in %) of **11.4** for Moravian 14.

2. Moravian 69 v. Moravian 37 (one of the two varieties closest to Moravian 69 as previously stated).

As noted above in the first portion of this Exhibit which pertains to comparative genetic data (Section A), both Moravian 69 and Moravian 37 are characterized by distinctively different genetic profiles. This data constitutes definitive evidence of the unique nature of Moravian 69 relative to Moravian 37 and is

sufficient, by itself, to support the allowability of Moravian 69 as a totally distinct variety compared with Moravian 37. However, as supplemental/extra evidence, the following agronomic differences and data are provided concerning Moravian 69 and Moravian 37:

[i] **Moravian 69 has a lower Test Weight compared with Moravian 37**

This key difference is clearly illustrated in:

A. The Data Table provided herewith as Attachment AG-1 (entitled "2002 SCVPT Data, Coors Farm Center, CO"). This Table sets forth a Test Weight (in lbs/bu) of **53.4** for Moravian 69 v. a Test Weight (in lbs/bu) of **54.8** for Moravian 37.

B. The Data Table provided herewith as Attachment AG-2 (entitled "2002 SIVPT Data, Coors Research Farm Burley, ID"). This Table sets forth a Test Weight (in lbs/bu) of **52.8** for Moravian 69 v. a Test Weight (in lbs/bu) of **54.8** for Moravian 37.

C. The Data Table provided herewith as Attachment AG-3 (entitled "2002 MTVPT Data, Huntley, MT"). This Table sets forth a Test Weight (in lbs/bu) of **46.3** for Moravian 69 v. a Test Weight (in lbs/bu) of **50.8** for Moravian 37.

D. The Data Table provided herewith as Attachment AG-4 (entitled "2003 SCVPT Data, Coors Farm Center, CO"). This Table sets forth a Test Weight (in lbs/bu) of **53.4** for Moravian 69 v. a Test Weight (lbs/bu) of **55.7** for Moravian 37.

E. The Data Table provided herewith as Attachment AG-7 (entitled "2003 SIVPT Data, Coors Research Farm Burley, ID"). This Table sets forth a Test Weight (in lbs/bu) of **53.2** for Moravian 69 v. a Test Weight (in lbs/bu) of **53.6** for Moravian 37.

F. The Data Table provided herewith as Attachment AG-5 (entitled "2004 SIVPT Data, Coors Research Farm Burley, ID"). This Table sets forth a Test Weight (in lbs/bu) of **53.4** for Moravian 69 v. a Test Weight (in lbs/bu) of **55.2** for Moravian 37.

G. The Data Table provided herewith as Attachment AG-6 (entitled "2004 NCVPT Data, Windsor, CO"). This Table sets forth

a Test Weight (in lbs/bu) of **47.5** for Moravian 69 v. a Test Weight (in lbs/bu) of **49.4** for Moravian 37.

[ii] **Moravian 69 has a lower Color value compared with Moravian 37**

This key difference is clearly illustrated in:

A. The Data Table provided herewith as Attachment AG-1 (entitled "2002 SCVPT Data, Coors Farm Center, CO"). This Table sets forth a Color value of **69** for Moravian 69 v. a Color value of **74** for Moravian 37.

B. The Data Table provided herewith as Attachment AG-2 (entitled "2002 SIVPT Data, Coors Research Farm Burley, ID"). This Table sets forth a Color value of **65** for Moravian 69 v. a Color value of **71** for Moravian 37.

C. The Data Table provided herewith as Attachment AG-3 (entitled "2002 MTVPT Data, Huntley, MT"). This Table sets forth a Color value of **76** for Moravian 69 v. a Color value of **78** for Moravian 37.

D. The Data Table provided herewith as Attachment AG-4 (entitled "2003 SCVPT Data, Coors Farm Center, CO"). This Table sets forth a Color value of **56** for Moravian 69 v. a Color value of **62** for Moravian 37.

E. The Data Table provided herewith as Attachment AG-7 (entitled "2003 SIVPT Data, Coors Research Farm Burley, ID"). This Table sets forth a Color value of **63** for Moravian 69 v. a Color value of **68** for Moravian 37.

F. The Data Table provided herewith as Attachment AG-5 (entitled "2004 SIVPT Data, Coors Research Farm Burley, ID"). This Table sets forth a Color value of **65** for Moravian 69 v. a Color value of **69** for Moravian 37.

G. The Data Table provided herewith as Attachment AG-6 (entitled "2004 NCPVT Data, Windsor, CO"). This Table sets forth a Color value of **26** for Moravian 69 v. a Color value of **29** for Moravian 37.

3. **Moravian 69 v. 96ACK-19 (one of the Parental Varieties associated with Moravian 69 as discussed above).**

As noted in the first portion of this Exhibit which pertains to comparative genetic data (Section A), both Moravian 69 and 96ACK-19 are characterized by distinctively different genetic profiles. This data constitutes definitive evidence of the unique nature of Moravian 69 relative to 96ACK-19 and is sufficient, by itself, to support the allowability of Moravian 69 as a totally distinct variety compared with 96ACK-19. However, as supplemental/extra evidence, the following agronomic differences and data are provided concerning Moravian 69 and 96ACK-19:

[i] **Moravian 69 has an earlier Heading Date compared with 96ACK-19**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Heading Date (in days) of **72.667** for Moravian 69 v. a Heading Date (in days) of **75.000** for 96ACK-19.

[ii] **Moravian 69 has a shorter Height compared with 96ACK-19**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Height (in inches) of **36.000** for Moravian 69 v. a Height (in inches) of **36.500** for 96ACK-19.

[iii] **Moravian 69 has a greater degree of Lodging compared with 96ACK-19**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Lodging value (in %) of **5** for Moravian 69 v. a Lodging value (in %) of **0** for 96ACK-19.

[iv] **Moravian 69 has a lower Yield in Bu/Ac compared with 96ACK-19**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Yield (in Bu/Ac) of **204.130** for Moravian 69 v. a Yield (in Bu/Ac) of **222.721** for 96ACK-19.

[v] **Moravian 69 has a lower Yield in Lbs/Ac @ 12.5% H₂O compared with 96ACK-19**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Yield (in Lbs/Ac @ 12.5% H₂O) of **10206.515** for Moravian 69 v. a Yield (in Lbs/Ac @ 12.5% H₂O) of **11136.048** for 96ACK-19.

[vi] **Moravian 69 has a lower Yield in Lbs/Ac over 6/64" compared with 96ACK-19**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Yield (in Lbs/Ac over 6/64") of **9620.345** for Moravian 69 v. a Yield (in Lbs/Ac over 6/64") of **10865.131** for 96ACK-19.

[vii] **Moravian 69 has a lower Test Weight in Lbs/Bu compared with 96ACK-19**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Test Weight (in Lbs/Bu) of **53.103** for Moravian 69 v. a Test Weight (in Lbs/Bu) of **54.445** for 96ACK-19.

[viii] **Moravian 69 has a lower Plump Grain % over 6/64" compared with 96ACK-19**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Plump

Grain % over 6/64" of **94.267** for Moravian 69 v. a Plump Grain % over 6/64" of **97.567** for 96ACK-19.

[ix] **Moravian 69 has a lower Grain Moisture % compared with 96ACK-19**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Grain Moisture % of **9.925** for Moravian 69 v. a Grain Moisture % of **10.043** for 96ACK-19.

[x] **Moravian 69 has a higher Color value compared with 96ACK-19**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Color value of **68.607** for Moravian 69 v. a Color value of **65.893** for 96ACK-19.

[xi] **Moravian 69 has a lower % Grain Protein (dry basis) compared with 96ACK-19**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a % Grain Protein (dry basis) of **11.340** for Moravian 69 v. a % Grain Protein (dry basis) of **11.443** for 96ACK-19.

4. Moravian 69 v. C91-194 (one of the Parental Varieties associated with Moravian 69 as discussed above).

As noted in the first portion of this Exhibit which pertains to comparative genetic data (Section A), both Moravian 69 and C91-194 are characterized by distinctively different genetic profiles. This data constitutes definitive evidence of the unique nature of Moravian 69 relative to C91-194 and is sufficient, by itself, to support the allowability of Moravian 69 as a totally distinct variety compared with C91-194. However, as

supplemental/extra evidence, the following agronomic differences and data are provided concerning Moravian 69 and C91-194:

[i] **Moravian 69 has a later Heading Date compared with C91-194**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Heading Date (in days) of **72.667** for Moravian 69 v. a Heading Date (in days) of **69.333** for C91-194.

[ii] **Moravian 69 has a shorter Height compared with C91-194**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Height (in inches) of **36.000** for Moravian 69 v. a Height (in inches) of **46.667** for C91-194.

[iii] **Moravian 69 has a greater degree of Lodging compared with C91-194**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Lodging value (in %) of **5** for Moravian 69 v. a Lodging value (in %) of **0** for C91-194.

[iv] **Moravian 69 has a lower Yield in Bu/Ac compared with C91-194**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Yield (in Bu/Ac) of **204.130** for Moravian 69 v. a Yield (in Bu/Ac) of **204.917** for C91-194.

[v] **Moravian 69 has a lower Yield in Lbs/Ac @ 12.5% H₂O compared with C91-194**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Yield (in Lbs/Ac @ 12.5% H₂O) of **10206.515** for Moravian 69 v. a Yield (in Lbs/Ac @ 12.5% H₂O) of **10245.847** for C91-194.

[vi] **Moravian 69 has a lower Yield in Lbs/Ac over 6/64" compared with C91-194**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Yield (in Lbs/Ac over 6/64") of **9620.345** for Moravian 69 v. a Yield (in Lbs/Ac over 6/64") of **9901.380** for C91-194.

[vii] **Moravian 69 has a lower Test Weight in Lbs/Bu compared with C91-194**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Test Weight (in Lbs/Bu) of **53.103** for Moravian 69 v. a Test Weight (in Lbs/Bu) of **54.832** for C91-194.

[viii] **Moravian 69 has a lower Plump Grain % over 6/64" compared with C91-194**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Plump Grain % over 6/64" of **94.267** for Moravian 69 v. a Plump Grain % over 6/64" of **96.667** for C91-194.

[ix] **Moravian 69 has a higher Grain Moisture % compared with C91-194**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Grain

Moisture % of **9.925** for Moravian 69 v. a Grain Moisture % of **9.838** for C91-194.

[x] **Moravian 69 has a lower Color value compared with C91-194**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Color value of **68.607** for Moravian 69 v. a Color value of **69.750** for C91-194.

[xi] **Moravian 69 has a lower % Grain Protein (dry basis) compared with C91-194**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a % Grain Protein (dry basis) of **11.340** for Moravian 69 v. a % Grain Protein (dry basis) of **11.937** for C91-194.

5. Moravian 69 v. AC87-29-12 (one of the Parental Varieties associated with Moravian 69 as discussed above).

As noted in the first portion of this Exhibit which pertains to comparative genetic data (Section A), both Moravian 69 and AC87-29-12 are characterized by distinctively different genetic profiles. This data constitutes definitive evidence of the unique nature of Moravian 69 relative to AC87-29-12 and is sufficient, by itself, to support the allowability of Moravian 69 as a totally distinct variety compared with AC87-29-12. However, as supplemental/extra evidence, the following agronomic differences and data are provided concerning Moravian 69 and AC87-29-12:

[i] **Moravian 69 has a later Heading Date compared with AC87-29-12**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Heading

Date (in days) of **72.667** for Moravian 69 v. a Heading Date (in days) of **70.000** for AC87-29-12.

[ii] **Moravian 69 has a shorter Height compared with AC87-29-12**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Height (in inches) of **36.000** for Moravian 69 v. a Height (in inches) of **39.000** for AC87-29-12.

[iii] **Moravian 69 has a greater degree of Lodging compared with AC87-29-12**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Lodging value (in %) of **5** for Moravian 69 v. a Lodging value (in %) of **0** for AC87-29-12.

[iv] **Moravian 69 has a lower Yield in Bu/Ac compared with AC87-29-12**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Yield (in Bu/Ac) of **204.130** for Moravian 69 v. a Yield (in Bu/Ac) of **208.323** for AC87-29-12.

[v] **Moravian 69 has a lower Yield in Lbs/Ac @ 12.5% H₂O compared with AC87-29-12**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Yield (in Lbs/Ac @ 12.5% H₂O) of **10206.515** for Moravian 69 v. a Yield (in Lbs/Ac @ 12.5% H₂O) of **10416.154** for AC87-29-12.

[vi] **Moravian 69 has a lower Yield in Lbs/Ac over 6/64" compared with AC87-29-12**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Yield (in Lbs/Ac over 6/64") of **9620.345** for Moravian 69 v. a Yield (in Lbs/Ac over 6/64") of **9824.098** for AC87-29-12.

[vii] **Moravian 69 has a lower Test Weight in Lbs/Bu compared with AC87-29-12**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Test Weight (in Lbs/Bu) of **53.103** for Moravian 69 v. a Test Weight (in Lbs/Bu) of **54.052** for AC87-29-12.

[viii] **Moravian 69 has a lower Plump Grain % over 6/64" compared with AC87-29-12**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Plump Grain % over 6/64" of **94.267** for Moravian 69 v. a Plump Grain % over 6/64" of **94.300** for AC87-29-12.

[ix] **Moravian 69 has a lower Grain Moisture % compared with AC87-29-12**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Grain Moisture % of **9.925** for Moravian 69 v. a Grain Moisture % of **10.140** for AC87-29-12.

[x] **Moravian 69 has a lower Color value compared with AC87-29-12**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Color

value of **68.607** for Moravian 69 v. a Color value of **72.023** for AC87-29-12.

[xi] **Moravian 69 has a lower % Grain Protein (dry basis) compared with AC87-29-12**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a % Grain Protein (dry basis) of **11.340** for Moravian 69 v. a % Grain Protein (dry basis) of **11.633** for AC87-29-12.

6. Moravian 69 v. AC84-25-3 (one of the Parental Varieties associated with Moravian 69 as discussed above).

As noted in the first portion of this Exhibit which pertains to comparative genetic data (Section A), both Moravian 69 and AC84-25-3 are characterized by distinctively different genetic profiles. This data constitutes definitive evidence of the unique nature of Moravian 69 relative to AC84-25-3 and is sufficient, by itself, to support the allowability of Moravian 69 as a totally distinct variety compared with AC84-25-3. However, as supplemental/extra evidence, the following agronomic differences and data are provided concerning Moravian 69 and AC84-25-3:

[i] **Moravian 69 has a later Heading Date compared with AC84-25-3**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Heading Date (in days) of **72.667** for Moravian 69 v. a Heading Date (in days) of **67.000** for AC84-25-3.

[ii] **Moravian 69 has a taller Height compared with AC84-25-3**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Height

(in inches) of **36.000** for Moravian 69 v. a Height (in inches) of **35.833** for AC84-25-3.

[iii] **Moravian 69 has a greater degree of Lodging compared with AC84-25-3**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Lodging value (in %) of **5** for Moravian 69 v. a Lodging value (in %) of **0** for AC84-25-3.

[iv] **Moravian 69 has a higher Yield in Bu/Ac compared with AC84-25-3**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Yield (in Bu/Ac) of **204.130** for Moravian 69 v. a Yield (in Bu/Ac) of **177.386** for AC84-25-3.

[v] **Moravian 69 has a higher Yield in Lbs/Ac @ 12.5% H₂O compared with AC84-25-3**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Yield (in Lbs/Ac @ 12.5% H₂O) of **10206.515** for Moravian 69 v. a Yield (in Lbs/Ac @ 12.5% H₂O) of **8869.291** for AC84-25-3.

[vi] **Moravian 69 has a higher Yield in Lbs/Ac over 6/64" compared with AC84-25-3**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Yield (in Lbs/Ac over 6/64") of **9620.345** for Moravian 69 v. a Yield (in Lbs/Ac over 6/64") of **8542.382** for AC84-25-3.

[vii] **Moravian 69 has a lower Test Weight in Lbs/Bu compared with AC84-25-3**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Test Weight (in Lbs/Bu) of **53.103** for Moravian 69 v. a Test Weight (in Lbs/Bu) of **54.670** for AC84-25-3.

[viii] **Moravian 69 has a lower Plump Grain % over 6/64" compared with AC84-25-3**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Plump Grain % over 6/64" of **94.267** for Moravian 69 v. a Plump Grain % over 6/64" of **96.467** for AC84-25-3.

[ix] **Moravian 69 has a lower Grain Moisture % compared with AC84-25-3**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Grain Moisture % of **9.925** for Moravian 69 v. a Grain Moisture % of **10.193** for AC84-25-3.

[x] **Moravian 69 has a higher Color value compared with AC84-25-3**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a Color value of **68.607** for Moravian 69 v. a Color value of **64.387** for AC84-25-3.

[xi] **Moravian 69 has a lower % Grain Protein (dry basis) compared with AC84-25-3**

This key difference is clearly illustrated in the Data Table provided herewith as Attachment AG-8 (entitled "2004 SIPVP Data, Coors Research Farm Burley, ID"). This Table sets forth a % Grain

Protein (dry basis) of **11.340** for Moravian 69 v. a % Grain
Protein (dry basis) of **12.017** for AC84-25-3.

<<<<Overall Conclusions>>>>

It is overwhelmingly clear from the above-listed data that Moravian 69 is completely distinguishable from: (1) Moravian 14; (2) Moravian 37; (3) 96ACK-19; (4) C91-194; (5) AC87-29-12; and (6) AC84-25-3 in many different ways, thereby confirming the novelty and distinctness of Moravian 69 under all statutory guidelines. Accordingly, Applicant/Owner Coors Global Properties, Inc. is entitled to Plant Variety Protection on Moravian 69 and should any further information be needed, it will be provided immediately upon request.

Attachment G-1 (pages 64-73)

Khasa, P.D., C.H. Newton, M.H. Rahman, B. Jaquish, and B.P. Dancik. 2000. Isolation, characterization, and inheritance of microsatellite loci in alpine larch and western larch. *Genome* 43: 439-448.

Attachment G-2 (pages 74-80)

Bornet, B and M Branchard. 2001. Nonanchored inter simple sequence repeat (ISSR) markers: reproducible and specific tools for genome fingerprinting. *Plant Molecular Biology Reporter* 19:209-215.

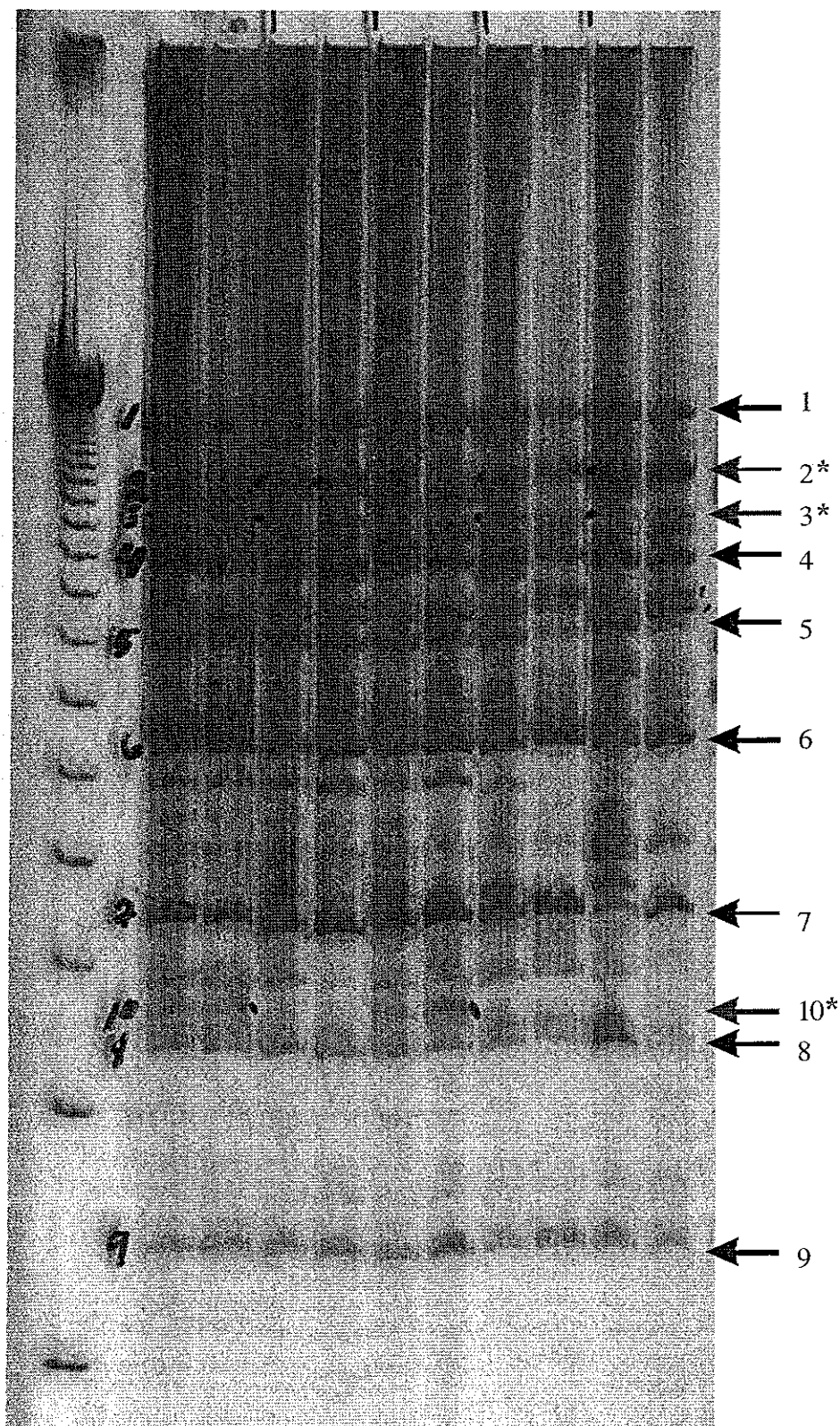
Attachment G-3 (pages 81-89)

Pradeep Reddy, M., NSarla, and E.A. Siddiq. Inter simple sequence repeat (ISSR) polymorphism and its application in plant breeding. 2002. *Euphytica* 128: 9-17.

64 through 89

ISSR 1
MB0024

AC84-25-3
1 2
AC87-29-12
1 2
C91-194
1 2
Moravian 69
1 2
96ACK-19
1 2
Marker Number



Customer: Coors
Contact: Jim Hettinger
Address:

Project: MB0024
Report Date: January 10, 2005
Species: barley

STA Laboratories, Inc.
1821 Vista View Drive
Longmont, Colorado 80504
(303)651-6417
iras@stalabs.com

Description: Seeds were planted in pots in a greenhouse. Two bulks of 10 - 20 individuals from each sample was harvested, freeze-dried, and the DNA extracted. These results thus represent the analysis of two different repetitions for each of the samples submitted. These markers are dominant so they are scored as the presence or absence of the marker. The sample genotypes are recorded within columns and samples can be compared by going along rows for each marker. The presence and absence of markers are also color coded to facilitate sample comparison. The Pop labels are added to the samples for interpreting the associated dendograms.

Reported By: Russell D. Rasmussen, Ph.D. (Manager - Molecular Breeding Services)

Analyzed By: Jody Gould (Associate Technician - Molecular Breeding Services)

ISSR	Marker No.	Sample description and dominant marker score (1 = present, 0 = absent)				
		AC84-25-3 (Pop 1)	AC87-29-12 (Pop 2)	C91-194 (Pop 3)	Moravian 69 (Pop 4)	96 ACK-19 (Pop 5)
1	1	1	1	1	1	1
1	2	0	1	0	1	1
1	3	1	1	0	1	1
1	4	1	1	1	1	1
1	5	1	1	1	1	1
1	6	1	1	1	1	1
1	7	1	1	1	1	1
1	8	1	1	1	1	1
1	9	1	1	1	1	1
1	10	1	0	1	0	0
3	1	1	1	1	1	1
3	2	1	1	1	1	0
3	3	1	1	1	1	1
3	4	1	0	1	1	1
3	5	1	1	1	1	1
3	6	1	1	1	1	1
3	7	1	1	1	1	1
3	8	0	1	1	1	0
3	9	1	0	0	0	0
3	10	1	1	1	1	1
3	11	0	1	1	1	0
4	1	1	1	1	1	1
4	2	1	1	1	1	1
4	3	1	1	1	1	1
4	4	1	1	1	1	1
4	5	1	1	1	1	1
4	6	1	1	1	1	1

Customer: Coors
Contact: Jim Hettinger
Address:

Project: MB0024
Report Date: January 10, 2005
Species: barley

STA Laboratories, Inc.
1821 Vista View Drive
Longmont, Colorado 80504
(303)651-6417
iras@stalabs.com

Description: Seeds were planted in pots in a greenhouse. Two bulks of 10 - 20 individuals from each sample was harvested, freeze-dried, and the DNA extracted. These results thus represent the analysis of two different repetitions for each of the samples submitted. These markers are dominant so they are scored as the presence or absence of the marker. The sample genotypes are recorded within columns and samples can be compared by going along rows for each marker. The presence and absence of markers are also color coded to facilitate sample comparison. The Pop labels are added to the samples for interpreting the associated dendograms.

Reported By: Russell D. Rasmussen, Ph.D. (Manager - Molecular Breeding Services)

Analyzed By: Jody Gould (Associate Technician - Molecular Breeding Services)

ISSR	Marker No.	Sample description and dominant marker score (1 = present, 0 = absent)				
		AC84-25-3 (Pop 1)	AC87-29-12 (Pop 2)	C91-194 (Pop 3)	Moravian 69 (Pop 4)	96 ACK-19 (Pop 5)
4	7	1	1	1	1	1
4	8	1	1	1	1	1
5	1	1	1	1	1	1
5	2	1	1	1	1	1
5	3	0	1	0	0	0
5	4	1	1	1	1	1
5	5	1	1	1	1	1
5	6	1	1	1	1	1
5	7	1	1	1	1	1
5	8	1	0	1	1	0
6	1	1	1	1	1	1
6	2	1	1	1	1	1
6	3	1	1	1	1	1
6	4	1	1	1	1	1
6	5	1	1	1	1	1
6	6	0	1	0	1	1
6	7	1	1	1	1	1
6	8	1	1	1	1	1
7	1	1	1	1	1	1
7	2	1	1	1	1	1
7	3	1	1	1	1	1
7	4	0	1	1	1	0
7	5	1	1	0	1	1
7	6	1	1	1	1	1
7	7	1	1	1	1	1
7	8	1	1	1	1	1
7	9	0	0	0	1	1

200500348

Project: MB0024
Report Date: January 10, 2005
Species: barley

STA Laboratories, Inc.
1821 Vista View Drive
Longmont, Colorado 80504
(303)651-6417
rras@stalabs.com

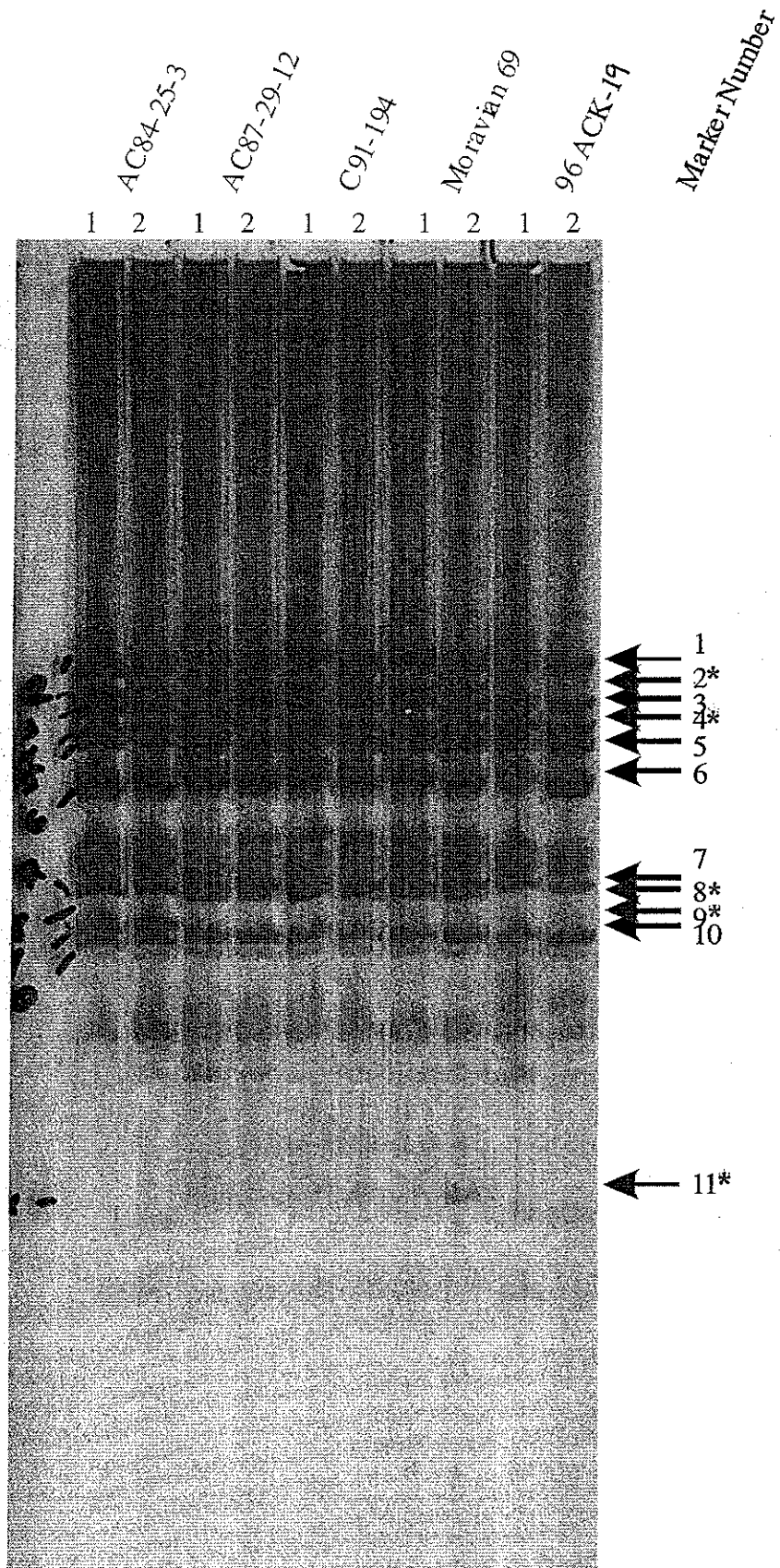
Description: Seeds were planted in pots in a greenhouse. Two bulks of 10 - 20 individuals from each sample was harvested, freeze-dried, and the DNA extracted. These results thus represent the analysis of two different repetitions for each of the samples submitted. These markers are dominant so they are scored as the presence or absence of the marker. The sample genotypes are recorded within columns and samples can be compared by going along rows for each marker. The presence and absence of markers are also color coded to facilitate sample comparison. The Pop labels are added to the samples for interpreting the associated dendrograms.

Reported By: Russell D. Rasmussen, Ph.D. (Manager - Molecular Breeding Services)

AnalYZed By: Jody Gould (Associate Technician - Molecular Breeding Services)

ISSR	Marker No.	Sample description and dominant marker score (1 = present, 0 = absent)				
		AC84-25-3 (Pop 1)	AC87-29-12 (Pop 2)	C91-194 (Pop 3)	Moravian 69 (Pop 4)	96 ACK-19 (Pop 5)
7	10	1	1	1	1	1
7	11	1	1	1	1	1
7	12	1	1	1	1	0
7	13	1	0	1	0	0
7	14	1	1	1	0	0

ISSR 3
MB0024



Customer: Coors
Contact: Jim Hettinger
Address:

Project: MB0024
Report Date: January 10, 2005
Species: barley

STA Laboratories, Inc.
1821 Vista View Drive
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(303)651-6417
stras@stalabs.com

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Reported By: Russell D. Rasmussen, Ph.D. (Manager - Molecular Breeding Services)

Analyzed By: Jody Gould (Associate Technician - Molecular Breeding Services)

ISSR	Marker No.	Sample description and dominant marker score (1 = present, 0 = absent)				
		AC84-25-3 (Pop 1)	AC87-29-12 (Pop 2)	C91-194 (Pop 3)	Moravian 69 (Pop 4)	96 ACK-19 (Pop 5)
1	1	1	1	1	1	1
1	2	0	1	0	1	1
1	3	1	1	0	1	1
1	4	1	1	1	1	1
1	5	1	1	1	1	1
1	6	1	1	1	1	1
1	7	1	1	1	1	1
1	8	1	1	1	1	1
1	9	1	1	1	1	1
1	10	1	0	1	0	0
3	1	1	1	1	1	1
3	2	1	1	1	1	0
3	3	1	1	1	1	1
3	4	1	0	1	1	1
3	5	1	1	1	1	1
3	6	1	1	1	1	1
3	7	1	1	1	1	1
3	8	0	1	1	1	0
3	9	1	0	0	0	0
3	10	1	1	1	1	1
3	11	0	1	1	1	0
4	1	1	1	1	1	1
4	2	1	1	1	1	1
4	3	1	1	1	1	1
4	4	1	1	1	1	1
4	5	1	1	1	1	1
4	6	1	1	1	1	1

Customer: Coors
Contact: Jim Hettinger
Address:

Project: MB0024
Report Date: January 10, 2005
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		AC84-25-3 (Pop 1)	AC87-29-12 (Pop 2)	C91-194 (Pop 3)	Moravian 69 (Pop 4)	96 ACK-19 (Pop 5)
4	7	1	1	1	1	1
4	8	1	1	1	1	1
5	1	1	1	1	1	1
5	2	1	1	1	1	1
5	3	0	1	0	0	0
5	4	1	1	1	1	1
5	5	1	1	1	1	1
5	6	1	1	1	1	1
5	7	1	1	1	1	1
5	8	1	0	1	1	0
6	1	1	1	1	1	1
6	2	1	1	1	1	1
6	3	1	1	1	1	1
6	4	1	1	1	1	1
6	5	1	1	1	1	1
6	6	0	1	0	1	1
6	7	1	1	1	1	1
6	8	1	1	1	1	1
7	1	1	1	1	1	1
7	2	1	1	1	1	1
7	3	1	1	1	1	1
7	4	0	1	1	1	0
7	5	1	1	1	1	1
7	6	1	1	1	1	1
7	7	1	1	1	1	1
7	8	1	1	1	1	1
7	9	0	0	0	1	1

4 0500348

Project: MB0024
Report Date: January 10, 2005
Species: barley

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Reported By: Russell D. Rasmussen, Ph.D. (Manager - Molecular Breeding Services)

Analyzed By: Jody Gould (Associate Technician - Molecular Breeding Services)

[illegible]

ISSR 4
MB0024

AC84-25-3

AC87-29-12

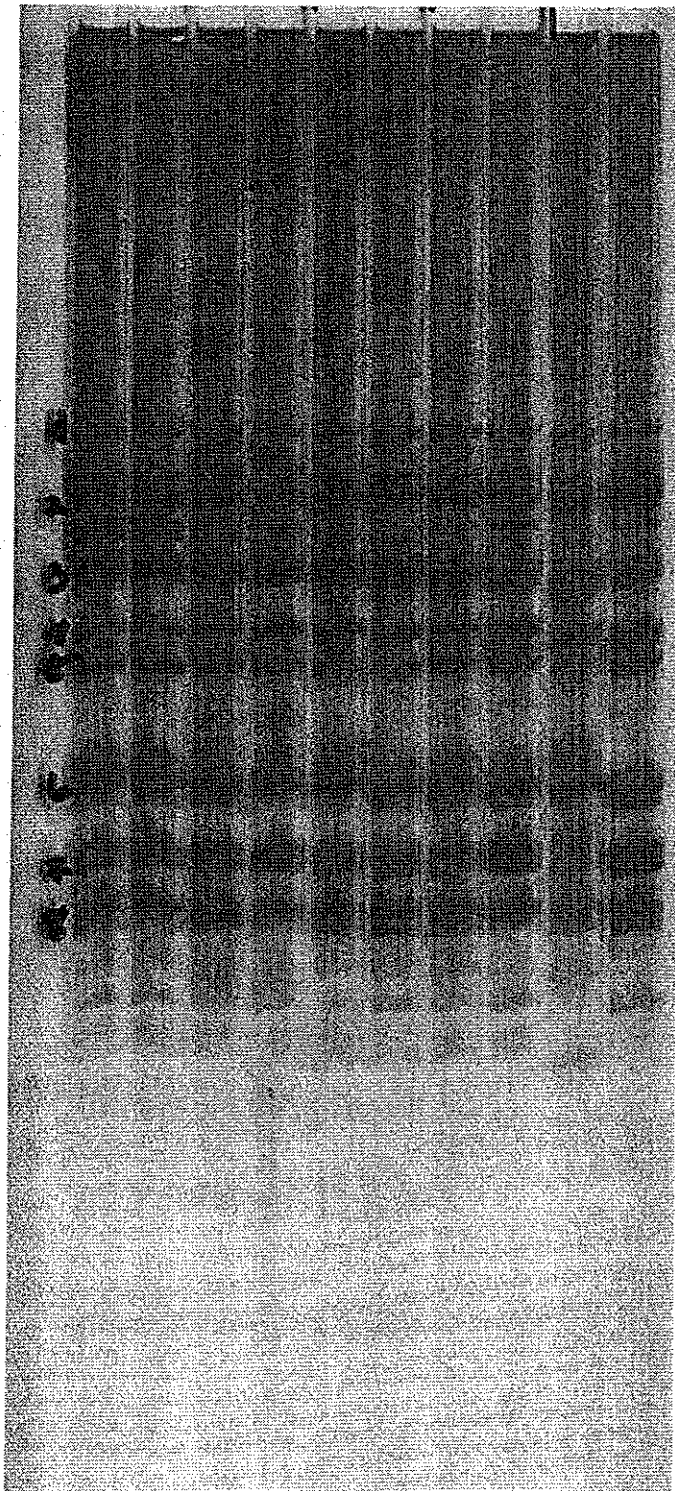
C91-194

Moravian 69

96 ACK-19

Marker Number

1 2 1 2 1 2 1 2 1 2



← 1
← 2
← 3
← 4
← 5
← 6
← 7
← 8

Customer: Coors
Contact: Jim Hettinger
Address:

Project: MB0024
Report Date: January 10, 2005
Species: barley

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		AC84-25-3 (Pop 1)	AC87-29-12 (Pop 2)	C91-194 (Pop 3)	Moravian 69 (Pop 4)	96 ACK-19 (Pop 5)
1	1	1	1	1	1	1
1	2	0	1	0	1	1
1	3	1	1	0	1	1
1	4	1	1	1	1	1
1	5	1	1	1	1	1
1	6	1	1	1	1	1
1	7	1	1	1	1	1
1	8	1	1	1	1	1
1	9	1	1	1	1	1
1	10	1	0	1	0	0
3	1	1	1	1	1	1
3	2	1	1	1	1	0
3	3	1	1	1	1	1
3	4	1	0	1	1	1
3	5	1	1	1	1	1
3	6	1	1	1	1	1
3	7	1	1	1	1	1
3	8	0	1	1	1	0
3	9	1	0	0	0	0
3	10	1	1	1	1	1
3	11	0	1	1	1	0
4	1	1	1	1	1	1
4	2	1	1	1	1	1
4	3	1	1	1	1	1
4	4	1	1	1	1	1
4	5	1	1	1	1	1
4	6	1	1	1	1	1

Customer: Coors
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4	7	1	1	1	1	1
4	8	1	1	1	1	1
5	1	1	1	1	1	1
5	2	1	1	1	1	1
5	3	0	1	0	0	0
5	4	1	1	1	1	1
5	5	1	1	1	1	1
5	6	1	1	1	1	1
5	7	1	1	1	1	1
5	8	1	0	1	1	0
6	1	1	1	1	1	1
6	2	1	1	1	1	1
6	3	1	1	1	1	1
6	4	1	1	1	1	1
6	5	1	1	1	1	1
6	6	0	1	0	1	1
6	7	1	1	1	1	1
6	8	1	1	1	1	1
7	1	1	1	1	1	1
7	2	1	1	1	1	1
7	3	1	1	1	1	1
7	4	0	1	1	1	0
7	5	1	1	1	1	1
7	6	1	1	1	1	1
7	7	1	1	1	1	1
7	8	1	1	1	1	1
7	9	0	0	0	1	1

200500348

Project: MB0024
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Reported By: Russell D. Rasmussen, Ph.D. (Manager - Molecular Breeding Services)

Analyzed By: Jody Gould (Associate Technician - Molecular Breeding Services)

[illegible]

200500348

ISSR 5
MB0024

AC84-25-3

AC87-29-12

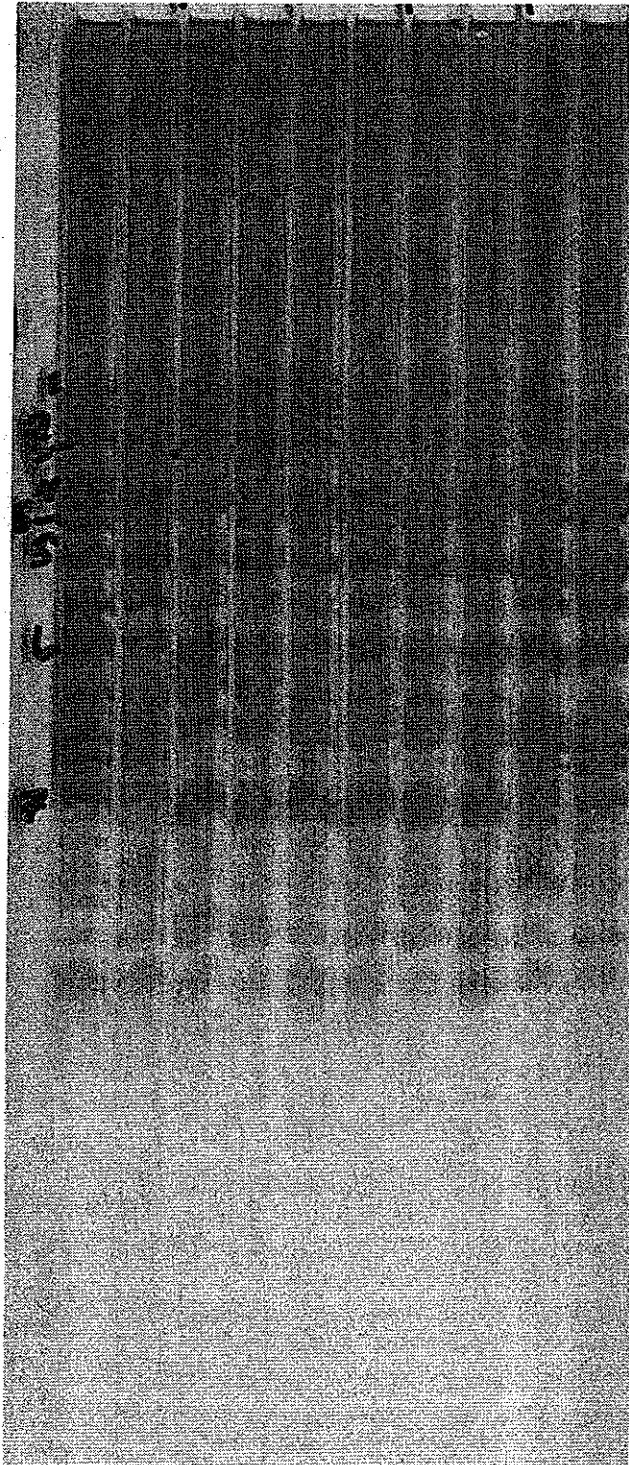
C91-194

Moravian 69

96 ACK-19

Marker Number

1 2 1 2 1 2 1 2 1 2



1
2
3*
4
8*
5
6
7

Customer: Coors
Contact: Jim Hettinger
Address:

Project: MB0024
Report Date: January 10, 2005
Species: barley

STA Laboratories, Inc.
1821 Vista View Drive
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(303)651-6417
irras@stalabs.com

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		AC84-25-3 (Pop 1)	AC87-29-12 (Pop 2)	C91-194 (Pop 3)	Moravian 69 (Pop 4)	96 ACK-19 (Pop 5)
1	1	1	1	1	1	1
1	2	0	1	0	1	1
1	3	1	1	0	1	1
1	4	1	1	1	1	1
1	5	1	1	1	1	1
1	6	1	1	1	1	1
1	7	1	1	1	1	1
1	8	1	1	1	1	1
1	9	1	1	1	1	1
1	10	1	0	1	0	0
3	1	1	1	1	1	1
3	2	1	1	1	1	0
3	3	1	1	1	1	1
3	4	1	0	1	1	1
3	5	1	1	1	1	1
3	6	1	1	1	1	1
3	7	1	1	1	1	1
3	8	0	1	1	1	0
3	9	1	0	0	0	0
3	10	1	1	1	1	1
3	11	0	1	1	1	0
4	1	1	1	1	1	1
4	2	1	1	1	1	1
4	3	1	1	1	1	1
4	4	1	1	1	1	1
4	5	1	1	1	1	1
4	6	1	1	1	1	1

Customer: Coors
 Contact: Jim Hettinger
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4	7	1	1	1	1	1
4	8	1	1	1	1	1
5	1	1	1	1	1	1
5	2	1	1	1	1	1
5	3	0	1	0	0	0
5	4	1	1	1	1	1
5	5	1	1	1	1	1
5	6	1	1	1	1	1
5	7	1	1	1	1	1
5	8	1	0	1	1	0
6	1	1	1	1	1	1
6	2	1	1	1	1	1
6	3	1	1	1	1	1
6	4	1	1	1	1	1
6	5	1	1	1	1	1
6	6	0	1	0	1	1
6	7	1	1	1	1	1
6	8	1	1	1	1	1
7	1	1	1	1	1	1
7	2	1	1	1	1	1
7	3	1	1	1	1	1
7	4	0	1	1	1	0
7	5	1	1	1	1	1
7	6	1	1	1	1	1
7	7	1	1	1	1	1
7	8	1	1	1	1	1
7	9	0	0	0	1	1

200500348

Project: MB0024
Report Date: January 10, 2005
Species: barley

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Reported By: Russell D. Rasmussen, Ph.D. (Manager - Molecular Breeding Services)

Analized By: Jody Gould (Associate Technician - Molecular Breeding Services)

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		AC84-25-3 (Pop 1)	AC87-29-12 (Pop 2)	C91-194 (Pop 3)	Moravian 69 (Pop 4)	96 ACK-19 (Pop 5)
7	10	1	1	1	1	1
7	11	1	1	1	1	1
7	12	1	1	1	1	0
7	13	1	0	1	0	0
7	14	1	1	1	0	0

105

200500348

ISSR 6
MB0024

AC84-25-3

AC87-29-12

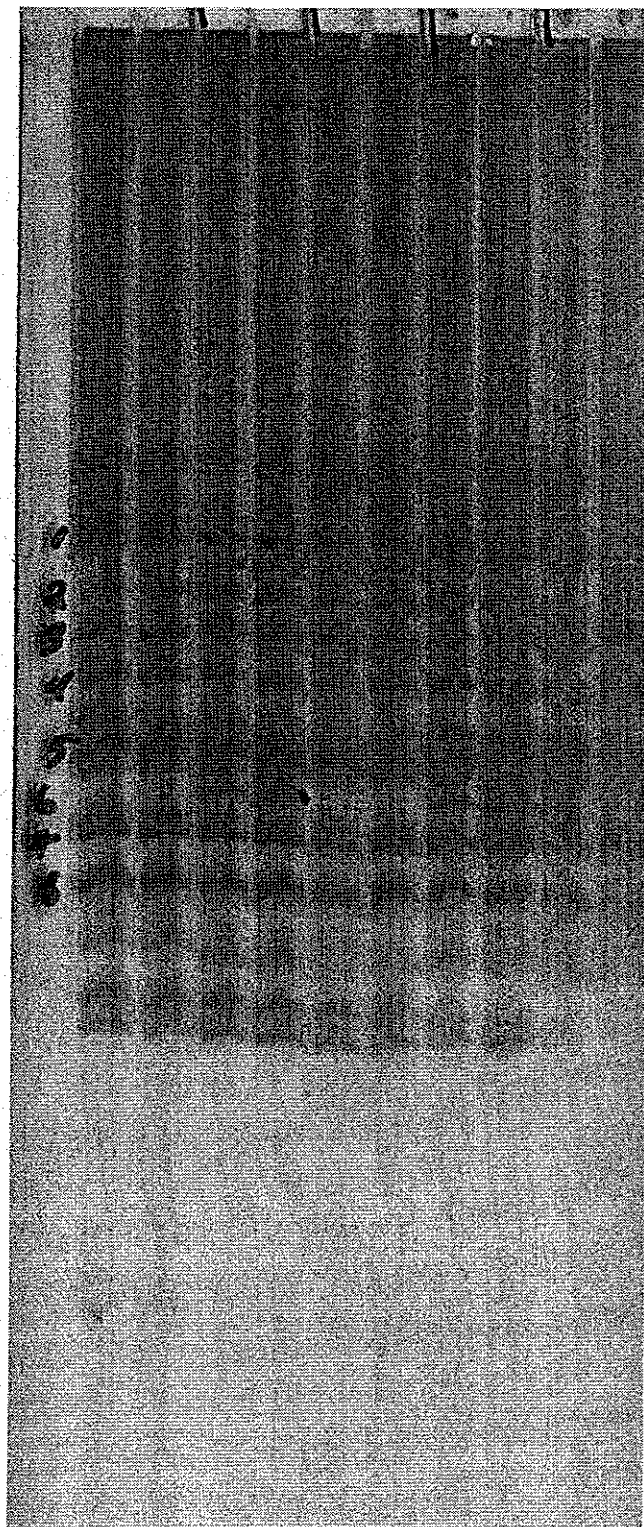
C91-194

Moravian 69

96 ACK-19

Marker Number

1 2 1 2 1 2 1 2 1 2



1
2
3
4
5
6*
7
8

Customer: Coors
Contact: Jim Hettinger
Address:

Project: MB0024
Report Date: January 10, 2005
Species: barley

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1	1	1	1	1	1	1
1	2	0	1	0	1	1
1	3	1	1	0	1	1
1	4	1	1	1	1	1
1	5	1	1	1	1	1
1	6	1	1	1	1	1
1	7	1	1	1	1	1
1	8	1	1	1	1	1
1	9	1	1	1	1	1
1	10	1	0	1	0	0
3	1	1	1	1	1	1
3	2	1	1	1	1	0
3	3	1	1	1	1	1
3	4	1	0	1	1	1
3	5	1	1	1	1	1
3	6	1	1	1	1	1
3	7	1	1	1	1	1
3	8	0	1	1	1	0
3	9	1	0	0	0	0
3	10	1	1	1	1	1
3	11	0	1	1	1	0
4	1	1	1	1	1	1
4	2	1	1	1	1	1
4	3	1	1	1	1	1
4	4	1	1	1	1	1
4	5	1	1	1	1	1
4	6	1	1	1	1	1

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4	8	1	1	1	1	1
5	1	1	1	1	1	1
5	2	1	1	1	1	1
5	3	0	1	0	0	0
5	4	1	1	1	1	1
5	5	1	1	1	1	1
5	6	1	1	1	1	1
5	7	1	1	1	1	1
5	8	1	0	1	1	0
6	1	1	1	1	1	1
6	2	1	1	1	1	1
6	3	1	1	1	1	1
6	4	1	1	1	1	1
6	5	1	1	1	1	1
6	6	0	1	0	1	1
6	7	1	1	1	1	1
6	8	1	1	1	1	1
7	1	1	1	1	1	1
7	2	1	1	1	1	1
7	3	1	1	1	1	1
7	4	0	1	1	1	0
7	5	1	1	1	1	1
7	6	1	1	1	1	1
7	7	1	1	1	1	1
7	8	1	1	1	1	1
7	9	0	0	0	1	1

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Reported By: Russell D. Rasmussen, Ph.D. (Manager - Molecular Breeding Services)

Analized By: Jody Gould (Associate Technician - Molecular Breeding Services)

ISSR	Marker No.	Sample description and dominant marker score (1 = present, 0 = absent)				
		AC84-25-3 (Pop 1)	AC87-29-12 (Pop 2)	C91-194 (Pop 3)	Moravian 69 (Pop 4)	96 ACK-19 (Pop 5)
7	10	1	1	1	1	1
7	11	1	1	1	1	1
7	12	1	1	1	1	0
7	13	1	0	1	0	0
7	14	1	1	1	0	0

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200500348

ISSR 7
MB0024

AC84-25-3

AC87-29-12

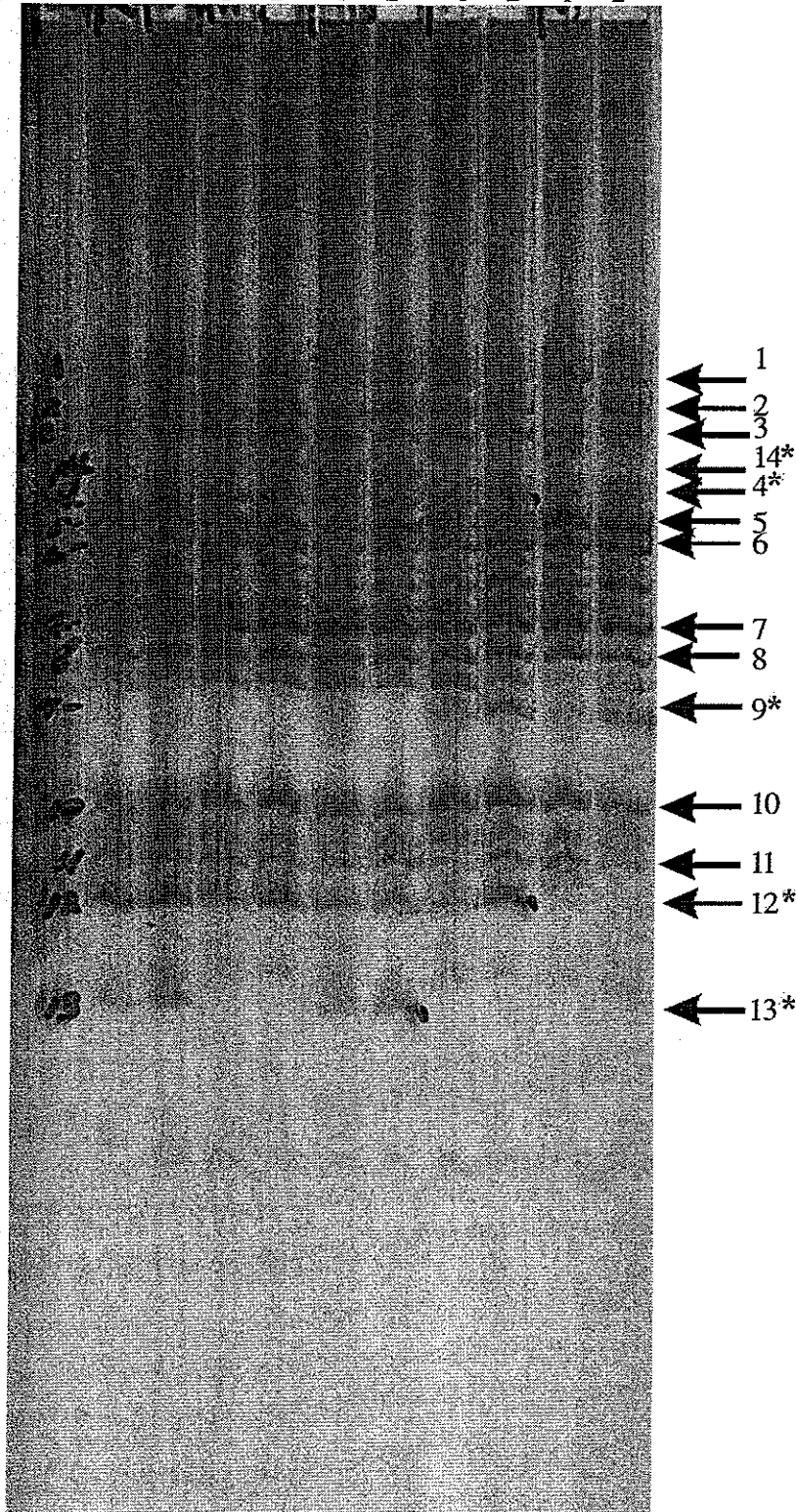
C91-194

Moravian 69

96 ACK-19

Marker Number

1 2 1 2 1 2 1 2 1 2



Customer: Coors
Contact: Jim Hettinger
Address:

Project: MB0024
Report Date: January 10, 2005
Species: barley

STA Laboratories, Inc.
1821 Vista View Drive
Longmont, Colorado 80504
(303)651-6417
iras@stalabs.com

Description: Seeds were planted in pots in a greenhouse. Two bulks of 10 - 20 individuals from each sample was harvested, freeze-dried, and the DNA extracted. These results thus represent the analysis of two different repetitions for each of the samples submitted. These markers are dominant so they are scored as the presence or absence of the marker. The sample genotypes are recorded within columns and samples can be compared by going along rows for each marker. The presence and absence of markers are also color coded to facilitate sample comparison. The Pop labels are added to the samples for interpreting the associated dendograms.

Reported By: Russell D. Rasmussen, Ph.D. (Manager - Molecular Breeding Services)

Analyzed By: Jody Gould (Associate Technician - Molecular Breeding Services)

ISSR	Marker No.	Sample description and dominant marker score (1 = present, 0 = absent)				
		AC84-25-3 (Pop 1)	AC87-29-12 (Pop 2)	C91-194 (Pop 3)	Moravian 69 (Pop 4)	96 ACK-19 (Pop 5)
1	1	1	1	1	1	1
1	2	0	1	0	1	1
1	3	1	1	0	1	1
1	4	1	1	1	1	1
1	5	1	1	1	1	1
1	6	1	1	1	1	1
1	7	1	1	1	1	1
1	8	1	1	1	1	1
1	9	1	1	1	1	1
1	10	1	0	1	0	0
3	1	1	1	1	1	1
3	2	1	1	1	1	0
3	3	1	1	1	1	1
3	4	1	0	1	1	1
3	5	1	1	1	1	1
3	6	1	1	1	1	1
3	7	1	1	1	1	1
3	8	0	1	1	1	0
3	9	1	0	0	0	0
3	10	1	1	1	1	1
3	11	0	1	1	1	0
4	1	1	1	1	1	1
4	2	1	1	1	1	1
4	3	1	1	1	1	1
4	4	1	1	1	1	1
4	5	1	1	1	1	1
4	6	1	1	1	1	1

200500348

Customer: Coors
Contact: Jim Hettinger
Address:

Project: MB0024
Report Date: January 10, 2005
Species: barley

STA Laboratories, Inc.
1821 Vista View Drive
Longmont, Colorado 80504
(303)651-6417
stras@stalabs.com

Description: Seeds were planted in pots in a greenhouse. Two bulks of 10 - 20 individuals from each sample was harvested, freeze-dried, and the DNA extracted. These results thus represent the analysis of two different repetitions for each of the samples submitted. These markers are dominant so they are scored as the presence or absence of the marker. The sample genotypes are recorded within columns and samples can be compared by going along rows for each marker. The presence and absence of markers are also color coded to facilitate sample comparison. The Pop labels are added to the samples for interpreting the associated dendograms.

Reported By: Russell D. Rasmussen, Ph.D. (Manager - Molecular Breeding Services)

Analyzed By: Jody Gould (Associate Technician - Molecular Breeding Services)

ISSR	Marker No.	Sample description and dominant marker score (1 = present, 0 = absent)				
		AC84-25-3 (Pop 1)	AC87-29-12 (Pop 2)	C91-194 (Pop 3)	Moravian 69 (Pop 4)	96 ACK-19 (Pop 5)
4	7	1	1	1	1	1
4	8	1	1	1	1	1
5	1	1	1	1	1	1
5	2	1	1	1	1	1
5	3	0	1	0	0	0
5	4	1	1	1	1	1
5	5	1	1	1	1	1
5	6	1	1	1	1	1
5	7	1	1	1	1	1
5	8	1	0	1	1	0
6	1	1	1	1	1	1
6	2	1	1	1	1	1
6	3	1	1	1	1	1
6	4	1	1	1	1	1
6	5	1	1	1	1	1
6	6	0	1	0	1	1
6	7	1	1	1	1	1
6	8	1	1	1	1	1
7	1	1	1	1	1	1
7	2	1	1	1	1	1
7	3	1	1	1	1	1
7	4	0	1	1	1	0
7	5	1	1	1	1	1
7	6	1	1	1	1	1
7	7	1	1	1	1	1
7	8	1	1	1	1	1
7	9	0	0	0	1	1

200500348

Project: MB0024
Report Date: January 10, 2005
Species: barley

STA Laboratories, Inc.
1821 Vista View Drive
Longmont, Colorado 80504
(303)651-6417
rras@stalabs.com

Description: Seeds were planted in pots in a greenhouse. Two bulks of 10 - 20 individuals from each sample was harvested, freeze-dried, and the DNA extracted. These results thus represent the analysis of two different repetitions for each of the samples submitted. These markers are dominant so they are scored as the presence or absence of the marker. The sample genotypes are recorded within columns and samples can be compared by going along rows for each marker. The presence and absence of markers are also color coded to facilitate sample comparison. The Pop labels are added to the samples for interpreting the associated dendrograms.

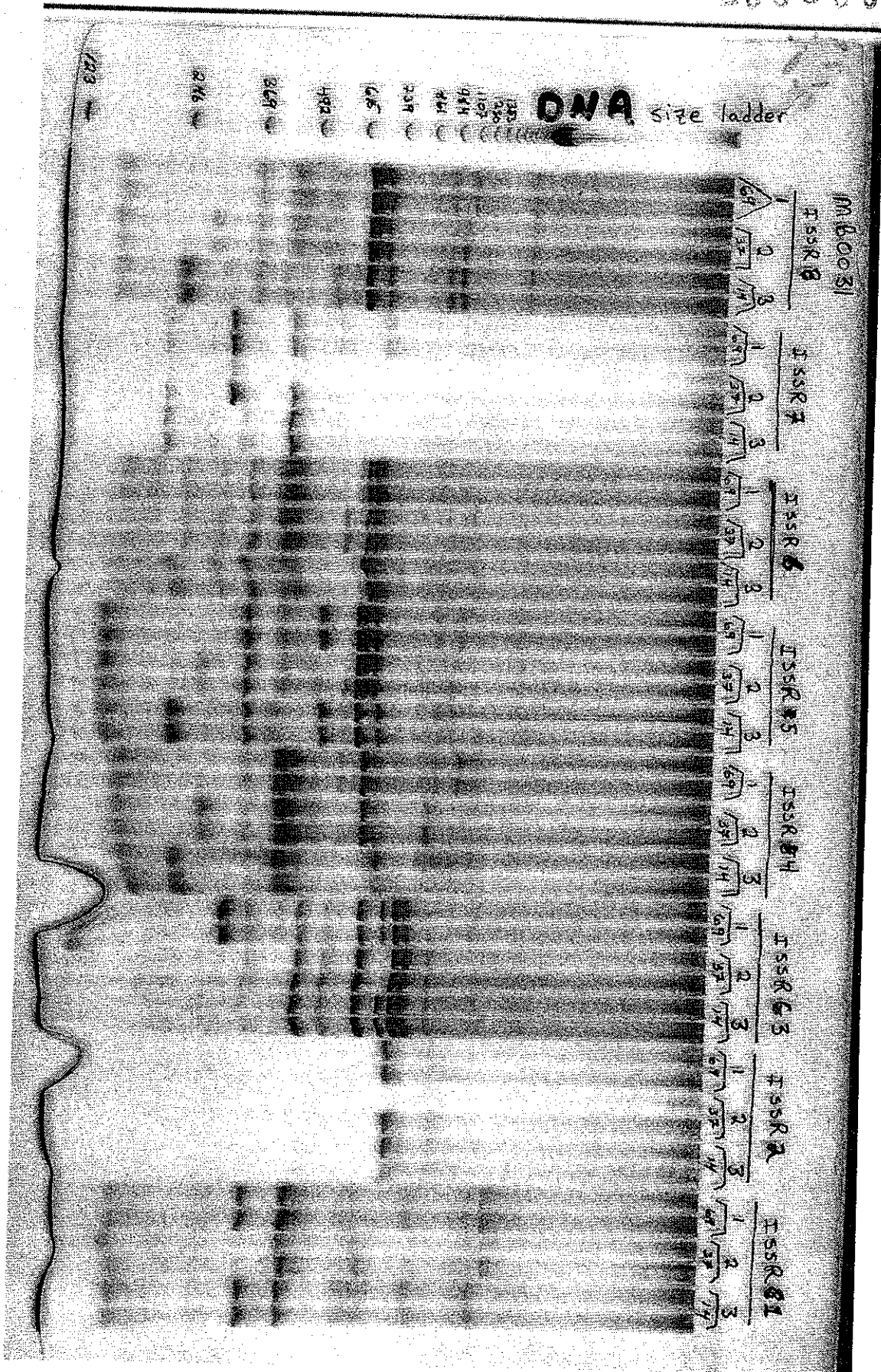
Reported By: Russell D. Rasmussen, Ph.D. (Manager - Molecular Breeding Services)

Analized By: Jody Gould (Associate Technician - Molecular Breeding Services)

ISSR	Marker No.	Sample description and dominant marker score (1 = present, 0 = absent)				
		AC84-25-3 (Pop 1)	AC87-29-12 (Pop 2)	C91-194 (Pop 3)	Moravian 69 (Pop 4)	96 ACK-19 (Pop 5)
7	10	1	1	1	1	1
7	11	1	1	1	1	1
7	12	1	1	1	1	0
7	13	1	0	1	0	0
7	14	1	1	1	0	0

Genetic Distance Report					
	1	2	3	4	5
pop ID	AC84-25-3	AC87-29-12	C91-194	Moravian 69	96 ACK-19
1 AC84-25-3	****	0.8136	0.9153	0.8305	0.8305
2 AC87-29-12	0.2063	****	0.8644	0.9153	0.8475
3 C91-194	0.0886	0.1457	****	0.8814	0.7797
4 Moravian 69	0.1857	0.0886	0.1263	****	0.8983
5 96 ACK-19	0.1857	0.1655	0.2489	0.1072	****

+-----AC84-25-3
 +-----1
 !-----C91-194
 !-----AC87-29-12
 !-----2
 +-----3-----Moravian 69
 !
 +-----96 ACK-19



Customer: Coors Research and Development
 Contact: Jim Hettinger
 Address: 7 North 400 W.
 Burley, ID 83318

Project: MB0031
 Report Date: April 4, 2005
 Species: barley

200500348
 STA Laboratories, Inc.
 1821 Vista View Drive
 Longmont, Colorado 80504
 (303)651-6417
 rras@stalabs.com

Description: Seeds were planted in pots in a greenhouse. Two bulks of 10 - 20 individuals from each sample was harvested, freeze-dried, and the DNA extracted. These results thus represent the analysis of two different repetitions for each of the samples submitted. These markers are dominant so they are scored as the presence or absence of the marker. The sample genotypes are recorded within columns and samples can be compared by going along rows for each marker. The presence and absence of markers are also color coded to facilitate sample comparison.

Reported By: Russell D. Rasmussen, Ph.D. (Manager - Molecular Breeding Services)

ISSR	Marker No.	approx. MW.	Sample description and dominant marker score (1 = present, 0 = absent)				
			M69 (pop 1)	M37 (pop 2)	M14 (pop 3)		
1	1	1200	1	1	0		
1	2	850	1	1	1		
1	3	500	1	1	1		
1	4	400	1	0	1		
2	5	750	1	1	1		
3	6	860	1	1	1		
3	7	850	1	1	1		
3	8	740	1	0	1		
3	9	640	1	1	1		
3	10	500	1	1	1		
3	11	350	1	0	0		
4	12	1100	1	0	0		
4	13	630	1	1	0		
4	14	260	0	1	0		
4	15	240	0	0	1		
5	16	710	0	0	1		
5	17	700	1	1	0		
5	18	690	1	1	0		
5	19	680	1	1	1		
5	20	500	1	0	1		
5	21	360	1	1	1		
5	22	250	0	1	0		
5	23	230	0	0	1		
6	24	630	1	1	1		
6	25	620	1	1	1		
6	26	590	0	1	0		
6	27	360	1	1	1		
6	28	300	1	1	1		
6	29	240	1	1	0		
6	30	230	0	0	1		
7	31	480	1	1	1		
7	32	350	0	0	1		
7	33	340	1	1	0		
7	34	230	1	1	1		
8	35	1100	1	0	0		
8	36	1050	0	1	1		
8	37	1000	1	1	1		
8	38	720	0	0	1		
8	39	700	1	1	0		
8	40	640	1	1	0		
8	41	610	1	1	1		
8	42	590	0	0	1		
8	43	350	1	1	1		
8	44	280	0	1	0		
8	45	240	0	0	1		


```

*****
**
**      Nei's Unbiased Measures of Genetic Identity and Genetic distance
**      [See Nei (1978) Genetics 89:583-590]
**
**
*****

```

pop ID	1 M69	2 M37	3 M14
1 M69	***	0.7556	0.5556
2 M37	0.2803	***	0.4889
3 M14	0.5878	0.7156	***

Nei's genetic identity (above diagonal) and genetic distance (below diagonal).

```

*****
**
**      Dendrogram Based Nei's (1978) Genetic distance: Method = UPGMA
**      --Modified from NEIGHBOR procedure of PHYLIP Version 3.5
**
*****

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```

+-----+-----pop1 M69
|-----|-----1
--2      +-----pop2 M37
|      +-----pop3 M14
+-----+

```

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2002 SCVPT Data, Coors Farm Center, CO (Moravian 14 Control)

Variety	Heading Date - Days From Planting	Height Inches	Lodging %	Yield			Test Weight lbs/bu	Plump Grain % over 6/64"	Grain Moisture %	Perten Color	% Grain Protein Dry Basis
				bu/ac	lbs/ac @ 12.5% H ₂ O	lbs/ac over 6/64"					
MORAVIAN 14	61	30	0	192	9596	9066	55.6	95	12.3	67	12.9
C69 (C98-36-05)	69	33	3	228	11391	10681	53.4	94	12.2	69	11.4
MORAVIAN 37	65	33	20	210	10485	10197	54.8	97	11.8	74	12.5
Trial Maximum	72	43	100	228	11391	10833	55.8	99	12.7	82	13.6
Trial Minimum	61	27	0	171	8545	7017	49.2	73	11.8	60	11.4
Trial Average	68	33	14	208	10410	9877	53.7	95	12.2	71	12.5
LSD @ 0.05	1.57	2.02	19.14	15.64	781	901	0.94	2.86	0.40	9.57	0.43
C.V. %	1.66	4.42	100.29	5.36	5.36	6.52	1.25	2.15	2.36	9.56	2.44

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2002 SIVPT Data, Coors Research Farm Burley, ID (Moravian 37 Control)

Variety	Heading Date - Days From Planting	Height Inches	Lodging %	Yield			Test Weight lbs/bu	Plump Grain % over 6/64"	Grain Moisture %	Perten Color	% Grain Protein Dry Basis
				bu/ac	lbs/ac @ 12.5% H ₂ O	lbs/ac over 6/64"					
MORAVIAN 37	72	32	34	190	9467	9180	54.8	97	10.4	71	11.4
C69 (C98-36-05)	72	30	43	206	10295	9678	52.8	94	10.1	65	10.5
MORAVIAN 14	65	31	6	192	9578	9049	55.8	95	10.4	70	11.7
Trial Maximum	72	32	43	206	10295	9678	55.8	97	10.4	71	11.7
Trial Minimum	65	30	6	190	9467	9049	52.8	94	10.1	65	10.5
Trial Average	70	31	28	196	9780	9303	54.5	95	10.3	69	11.2
LSD @ 0.05	1.89	2.94	34.46	21.00	1050	1103	1.28	4.46	0.31	3.59	0.94
C.V. %	1.92	6.72	91.86	8.21	8.21	9.11	1.73	3.36	2.16	3.58	5.73

200500348

2002 MTVPT Data, Huntley, MT (Moravian 37 Control)

Variety	Heading Date - Days Julian	Height Inches	Lodging %	Yield			Test Weight lbs/bu	Plump Grain % over 6/64"	Grain Moisture %	Perten Color	% Grain Protein Dry Basis
				bu/ac	lbs/ac @ 12.5% H ₂ O	lbs/ac over 6/64"					
MORAVIAN 37	172	33		164	7848	6843	50.8	87	9.8	78	12.6
MORAVIAN 14	169	34		165	7915	6316	53.4	80	9.9	74	12.6
C69 (C98-36-05)	176	32		149	7152	4434	46.3	62	9.3	76	13.2
Trial Maximum	176	34		165	7915	6843	53.4	87	9.9	78	13.2
Trial Minimum	169	32		149	7152	4434	46.3	62	9.3	74	12.6
Trial Average	172	33		159	7638	5865	50.2	76	9.7	76	12.8
LSD @ 0.05	1.60	1.60		13.40			1.10	7.50	0.40	1.50	0.60
C.V. %	0.60	3.50		6.30			1.70	6.90	2.70	1.40	3.20

2003 SCVPT Data, Coors Farm Center, CO (Moravian 14 Control)

Variety	Heading Date-Days From Planting	Height Inches	Lodging %	Yield		lbs/ac @ 12% H ₂ O	lbs/ac over 6/64"	Test Weight lbs/bu	Plump Grain % over 6/64"	Grain Moisture %	Pertin Color	% Grain Protein Dry Basis
				bu/ac	bu/ac							
Moravian 14	39	27	0	156	7796	7506		56.8	96	10.2	59	13.2
C69	50	30	0	181	9023	8572		53.4	95	10.1	56	11.8
Moravian 37	46	28	0	153	7659	7530		55.7	98	9.8	62	13.9
Trial Maximum	52.00	39.00	10.00	181.00	9023.00	8572.00		56.50	99.00	11.60	73.00	13.90
Trial Minimum	43.00	26.00	0.00	134.00	6722.00	6499.00		52.20	94.00	9.80	13.00	11.60
Trial Average	48.79	29.15	0.74	161.92	8099.26	7879.69		54.48	97.36	10.43	49.90	12.78
LSD @ 0.05	1.50	3.58	4.11	13.02	651.80	615.10		1.08	1.58	0.79	36.84	0.63
C.V. %	1.91	7.56	337.02	4.95	4.96	4.81		1.21	1.00	4.65	45.21	3.01

200500348

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2004 SIVPT Data, Coors Research Farm Burley, ID (Moravian 37 Control)

Variety	Heading Date-Days From Planting	Height Inches	Lodging %	Yield			Test Weight lbs/bu	Plump Grain % over 6/64"	Grain Moisture %	Perten Color	% Grain Protein Dry Basis
				bu/ac	lbs/ac @ 12% H ₂ O	lbs/ac over 6/64"					
Moravian37	72	35	0	221	11065	10809	55.2	98	10.4	69	11.3
Moravian14	69	36	0	238	11888	11403	55.9	96	10.7	70	11.5
C69	72	33	0	236	11834	11148	53.4	94	10.3	65	10.0
Trial Maximum	73.70	42.70	60.00	259.30	12967.00	12627.70	55.90	98.70	10.90	79.30	12.40
Trial Minimum	63.00	26.70	0.00	189.70	9484.00	9077.00	50.80	87.30	10.10	54.00	10.00
Trial Average	69.63	33.72	2.84	235.25	11762.55	11308.50	53.82	96.04	10.52	69.38	11.26
LSD @ 0.05	6.02	2.33	13.92	21.63	1082.00	1107.00	0.89	2.28	0.25	2.81	0.62
C.V. %	5.32	4.25	302.19	5.66	5.66	6.02	1.02	1.46	1.46	2.49	3.40

200500348

2004 NCVPT Data, Windsor, CO (Moravian 37 Control)

Variety	Heading Date-Days From Planting	Height Inches	Lodging %	Yield			Test Weight lbs/bu	Plump Grain % over 6/64"	Grain Moisture %	Perten Color	% Grain Protein Dry Basis
				bu/ac	lbs/ac @ 12% H ₂ O	lbs/ac over 6/64"					
Moravian37		26	3	127	6359	5956	49.4	94	11.4	29	11.7
Moravian14		24	10	133	6648	5821	50.3	88	11.4	29	11.8
C69		23	0	123	6157	5551	47.5	90	11.0	26	11.0
Trial Maximum	0.00	31.70	30.00	150.70	7530.00	7110.70	51.20	96.60	11.90	44.00	13.00
Trial Minimum	0.00	20.30	0.00	105.30	5270.30	4970.70	46.30	88.10	11.00	13.20	10.90
Trial Average	0.00	25.13	4.17	126.83	6341.02	5915.69	48.51	93.19	11.53	28.94	11.78
LSD @ 0.05	0.00	2.67	16.34	34.46	1725.00	1677.00	0.86	3.41	0.32	11.16	0.64
C.V. %	0.00	6.53	241.30	16.72	16.74	17.43	1.09	2.25	1.71	23.72	3.34

200500348

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2003 SIVPT Data, Coors Research Farm Burley, ID (Moravian 37 Control)

Variety	Heading		Height Inches	Lodging %	Yield			lbs/ac over 6/64"	Test Weight lbs/bu	Plump Grain % over 6/64"	Grain Moisture %	Perten Color	% Grain Protein Dry Basis
	Date-Days From Planting				bu/ac	lbs/ac @ 12% H ₂ O	lbs/ac over 6/64"						
Moravian 37	72		32	57	231	11543	10889		53.6	94	10.8	68	13.2
C69	73		32	23	268	13426	12934		53.2	96	10.7	63	12.3
Trial Maximum	77.00		40.00	97.00	278.00	13899.00	13666.00		54.80	98.00	11.40	80.00	13.90
Trial Minimum	64.00		27.00	0.00	195.00	9768.00	8676.00		50.40	88.00	10.50	56.00	11.70
Trial Average	73.00		32.98	43.78	236.88	11842.80	11282.18		52.79	95.10	10.94	69.83	12.93
LSD @ 0.05	1.38		4.12	41.91	37.75	1884.00	1849.00		1.13	2.92	0.64	5.02	0.92
C.V. %	1.16		7.68	58.82	9.80	9.79	10.08		1.31	1.89	3.59	4.42	4.38

200500348

2004 SIPVP Data, Coors Research Farm Burley, ID (Moravian 69 Control)											
Variety	Heading Date - Days Julian	Height Inches	Lodging %	Yield			Test Weight lbs/bu	Plump Grain % over 6/64"	Grain Moisture %	Perten Color	% Grain Protein Dry Basis
				bu/ac	lbs/ac @ 12.5% H ₂ O	lbs/ac over 6/64"					
C69	72.667	36.000	5	204.130	10206.515	9620.345	53.103	94.267	9.925	68.607	11.340
96ACK-19	75.000	36.500	0	222.721	11136.048	10865.131	54.445	97.567	10.043	65.893	11.443
C91-194	69.333	46.667	0	204.917	10245.847	9901.380	54.832	96.667	9.838	69.750	11.937
AC87-29-12	70.000	39.000	0	208.323	10416.154	9824.098	54.052	94.300	10.140	72.023	11.633
AC84-25-3	67.000	35.833	0	177.386	8869.291	8542.382	54.670	96.467	10.193	64.387	12.017
Trial Maximum	75.000	47.000	15	226.662	11333.084	10968.882	55.549	98.000	10.230	74.340	12.990
Trial Minimum	66.000	34.000	0	101.532	5076.589	4934.444	52.638	93.300	9.721	61.150	10.870
Trial Average	70.800	38.800	1	203.495	10174.771	9750.667	54.220	95.853	10.028	68.132	11.674
%COV	4.18%	11.34%	387.30%	15.06%	15.06%	15.18%	1.53%	1.62%	1.69%	6.89%	5.39%
Len											

200500348

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**U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705**

**OBJECTIVE DESCRIPTION OF VARIETY
Barley (*Hordeum vulgare* L.)**

NAME OF APPLICANT (S) Coors Global Properties, Inc.	TEMPORARY OR EXPERIMENTAL DESIGNATION C69	VARIETY NAME Moravian 69
ADDRESS (Street and No., or RD No., City, State, Zip Code, and Country) Union Tower 165 South Union Blvd., Suite 170 Lakewood, Colorado 80228, United States of America		FOR OFFICIAL USE ONLY PVPO NUMBER 200500348

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (i.e., or) when the number is either 99 or less or 9 or less.

1. GROWTH HABIT:

1 = Spring 2 = Facultative Winter 3 = Winter Early Growth: 1 = Prostrate 2 = Semi-Prostrate 3 = Erect

2. MATURITY: (50% Flowering)

1 = Early (California Mariout) 2 = Mid-Season (Betzes) 3 = Late (Frontier)

No. Days Earlier Than _____ *

Same as Check Harrington *

No. of Days Later Than Moravian 37 *

3. PLANT: (From Soil Level to Top of Head)

1 = Semi-Dwarf 2 = Short (California Mariout) 3 = Medium Tall (Betzes) 4 = Tall (Conquest)

cm Shorter Than _____ *

Same as Check Moravian 37 *

cm Taller Than Moravian 14 *

4. STEM:

Exsertion (Flag to Spike at Maturity): 1 = (0 - 3 cm) 2 = (3 - 10 cm) 3 = (10 - 15 cm)

Anthocyanin: 1 = Absent 2 = Present

No. of Nodes (Originating from Node Above Ground)

Collar Shape: 1 = Closed 2 = V-Shaped 3 = Open 4 = Modified Closed or Open

Shape of Neck: 1 = Straight 2 = Snaky 3 = Other (Specify) _____

* A commercial variety grown in the same trial.

5. LEAF:

- 1 Basal Leaf Sheath (Seedling): 1 = Glabrous 2 = Pubescent
- 2 Position of Flag Leaf (At Boot Stage): 1 = Drooping 2 = Upright
- 2 Waxiness: 1 = Absent (Glossy) 2 = Slightly Waxy 3 = Waxy
- 1 0 mm Width (First Leaf Below Flag Leaf)
- 1 5 cm Length (First Leaf Below Flag Leaf)
- 2 Anthocyanin in Leaf Sheath: 1 = Absent 2 = Present

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6. HEAD:

- 1 Type: 1 = Two-Rowed 2 = Six-Rowed
- 1 Density: 1 = Lax 2 = Erect (Not Dense) 3 = Erect (Dense) 4 = Other (Specify) _____
- 2 Shape: 1 = Tapering 2 = Strap 3 = Clavate 4 = Other (Specify) _____
- 1 Waxiness 1 = Absent (Glossy) 2 = Slightly Waxy 3 = Waxy
- 1 Lateral Kernels Overlap: 1 = None 2 = At Tip 3 = 1/4 – 1/2 of Head
- 1 Rachis (Hair on Edge): 1 = Lacking 2 = Few 3 = Covered

7. GLUME:

- 2 Length: 1 = 1/3 of Lemma 2 = 1/2 of Lemma 3 = More than 1/2 of Lemma
- 1 Hairs: 1 = None 2 = Short 3 = Long
- 4 Hair Covering: 1 = None 2 = Restricted to Middle 3 = Confined to Band 4 = Completely Covered
- 3 Awns: 1 = Less than Equal to Length of Glumes 2 = Equal to Length of Glumes 3 = More than Equal to Length of Glumes
- 3 Awn Surface: 1 = Smooth
2 = Semi-Smooth
3 = Rough

8. LEMMA:

- 5 Awn: 1 = Awnless
2 = Awnlets on Central Rows, Awnless on Lateral Rows
3 = Short on Central Rows, Awnlets on Lateral Rows
4 = Short (Less than Equal to Length of Spike)
5 = Long (Longer than Spike)
6 = Hooded
- 4 Awn Surface: 1 = Awnless 2 = Smooth 3 = Semi-Smooth 4 = Rough
- 3 Teeth: 1 = Absent 2 = Few 3 = Numerous
- 1 Hair: 1 = Absent 2 = Present
- 1 Shape of Base: 1 = Depression 2 = Slight Crease 3 = Transverse Crease
- 2 Raachilla Hairs: 1 = Short 2 = Long

9. STIGMA:

- 2 Hairs: 1 = Few 2 = Many

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10. SEED:

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<input type="text" value="2"/>	Type:	1 = Naked	2 = Covered
<input type="text" value="1"/>	Hairs on Ventral Furrow:	1 = Absent	2 = Present
<input type="text" value="3"/>	Length:	1 = Short (8.0 mm) 2 = Short to Mid-long (7.5 – 9.0 mm) 3 = Mid-long (8.5 – 9.5 mm) 4 = Mid-long to Long (9.0 – 10.5 mm) 5 = Long (10.0 mm)	
<input type="text" value="4"/>	Wrinkling of Hull:	1 = Naked	2 = Slightly Wrinkled 3 = Semi-Wrinkled 4 = Wrinkled
<input type="text" value="1"/>	Aleurone Color:	1 = Colorless (White or Yellow)	2 = Blue
<input type="text" value="0"/> <input type="text" value="0"/>	Percent Abortive	<input type="text" value="5"/> <input type="text" value="2"/>	GMS. per 1000 Seeds

11. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant, 3 = Intermediate, 4 = Tolerant)

<input type="text" value="0"/>	Septoria	<input type="text" value="0"/>	Net Blotch	<input type="text" value="0"/>	Spot Blotch	<input type="text" value="0"/>	Powdery Mildew
<input type="text" value="0"/>	Loose Smut	<input type="text" value="0"/>	Bacterial Blight	<input type="text" value="0"/>	Covered Smut	<input type="text" value="0"/>	False Loose Smut
<input type="text" value="0"/>	Stem Rust	<input type="text" value="0"/>	Leaf Rust	<input type="text" value="0"/>	Scab	<input type="text" value="0"/>	Scald
<input type="text" value="0"/>	Aster Yellows Virus	<input type="text" value="0"/>	BSMV	<input type="text" value="0"/>	BYDV	<input type="text" value="0"/>	Other (Specify) _____

12. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant, 3 = Intermediate, 4 = Tolerant)

<input type="text" value="0"/>	Green Bug	<input type="text" value="0"/>	English Grain Aphid	<input type="text" value="0"/>	Chinch Bug	<input type="text" value="0"/>	Armyworm
<input type="text" value="0"/>	Grasshoppers	<input type="text" value="0"/>	Cereal Leaf Beetle	<input type="text" value="0"/>	Other (Specify) _____		
Hessian Fly Races {		<input type="text" value="0"/>	GP	<input type="text" value="0"/>	A	<input type="text" value="0"/>	B
		<input type="text" value="0"/>	D	<input type="text" value="0"/>	E	<input type="text" value="0"/>	F
		<input type="text" value="0"/>	C	<input type="text" value="0"/> Other (Specify) _____			

13. CHEMICAL: (0 = Not Tested, 1 = Susceptible, 2 = Resistant, 3 = Intermediate, 4 = Tolerant)

<input type="text" value="0"/>	DDT	<input type="text" value="0"/>	Other (Specify) _____
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14. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Tillering	Moravian 37	Seed Size	Galena
Leaf Size	Moravian 14	Coleoptile Elongation	Moravian 37
Leaf Color*	Moravian 37	Seedling Pigmentation	Moravian 14
Leaf Carriage	Moravian 37		

REFERENCES:

The following publications may be used as a reference aid for the standardization of character descriptions and terms used in this form:

- Wiebe, G.A., and D.A. Reid, 1961, Classifications of Barley Varieties Grown in the United States and Canada in 1958, Technical Bulletin No. 1224, U.S. Department of Agriculture.
- Reid, D.A., and G.A. Wiebe, 1968, Barley: Origin, Botany, Culture, Winter Hardiness, Genetics, Utilization, Pests, Agriculture Handbook No. 338, U.S. Department of Agriculture, pp. 61-84.
- Malting Barley Improvement Association, Milwaukee, Wisconsin, 1971, Barley Variety Dictionary.

COLOR: Nickerson's or any recognized color fan may be used to determine color of the described variety.

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

EXHIBIT E

STATEMENT OF THE BASIS OF OWNERSHIP

1. NAME OF APPLICANT(S) Coors Global Properties, Inc.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER C69	3. VARIETY NAME Moravian 69
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) Union Tower 165 South Union Blvd., Suite 170 Lakewood, Colorado 80228 United States of America	5. TELEPHONE (Include area code) (720) 962-6560	6. FAX (Include area code) (720) 962-6558
7. PVPO NUMBER 200500348		

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain. ☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country. ☒ YES ☐ NO

10. Is the applicant the original owner? ☐ YES ☒ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☒ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

All of the specific individuals listed in Exhibit A (e.g. Kathy R. Adams, Dennis J. Dolan, Roy J. Hanson, Berry J. Treat, James M. Jakicic, James W. Hettinger, and any others which may have been involved in the creation of Moravian 69) were employed by Coors Brewing Company during breeding, development, production, testing, increase, and/or completion of barley variety Moravian 69 [originally designated with temporary/experimental designation C69] as noted above). By contract with its employees, Coors Brewing Company was therefore the original owner of barley variety Moravian 69. Prior to the filing of the current application, all right, title, and interest in and to barley variety Moravian 69 were transferred and assigned in writing by Coors Brewing Company to the present Applicant (Coors Global Properties, Inc.)

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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